New Orleans Medical
and
Surgical Journal

Vol. 94 FEBRUARY, 1942 No. 8

A STUDY OF THE EFFECTS OF COMBUSTION PRODUCTS OF NATURAL GAS UPON PUBLIC HEALTH*

HARVEY G. BECK, M. D.
BALTIMORE, MD.

In presenting this paper I shall avail myself largely of material collected through three main sources: (1) A review of the literature; (2) personal clinical investigations; (3) recent combustion products studies sponsored by the Resources Committee of the West Virginia University.

Since carbon monoxide ranks as the leading hazard among the products of combustion of natural gas and other fuels, the discussion will be limited to the consideration of this gas from the standpoint of a domestic and industrial health problem.

The immediate effect of carbon monoxide in producing acute asphyxiation and death is well known. It is the remote or residual effect occasionally following acute asphyxiation, and those cases of chronic states of ill health resulting from repeated and prolonged exposures that need to be especially emphasized. It was with the hope of establishing more definitely the role carbon monoxide plays in the causation of these delayed or chronic forms that led me to undertake a prolonged course of clinical investigation.

During these investigations 150 patients whose illness could be definitely traced to the effects of the gas were under observation. The incidence among residents in districts where natural gas is the chief source of fuel was found to be higher than among those residing in other districts, and that the gas affected more individuals in the homes than in the industries. Thus, in the state of West Virginia 80 per cent of those affected by the gas were engaged in non-industrial pursuits, housewives and domestic employees predominating; whereas in Maryland where less gas is consumed for domestic purposes, only 36 per cent were non-industrial. Hence, properly to evaluate carbon monoxide as a health hazard the domestic problem as well as the industrial and the late or secondary manifestations as well as the acute must be considered.

Many investigations have been made with respect to carbon monoxide as an industrial hazard but no systematic clinical survey has been made with respect to the gas as a domestic problem. Fortunately, such a survey was made available through a special fund created for the purpose of studying the clinical aspects and by provision made for the study of the problem from an engineering standpoint. Both features were combined in the combustion product study sponsored by the West Virginia University and assisted by the West Virginia State Department of Health, the West Virginia Geological Survey, the Utilities Gas Companies of West Virginia, and Cities Service Oil Company of New York.

SCOPE OF CLINICAL SURVEY

Careful inquiry was made as to the age, sex, marital status and occupation of the residents of each domicile; the facilities for ventilation, the length of residence in gas-heated homes, the period of possible exposure and the number of hours exposed daily; the state of health of all occupants and the effect upon health incident to change of air, residence or season of the year was ascertained.

*Read before the sixty-second annual meeting of the Louisiana State Medical Society, Shreveport, April 23, 1941.

This initial report was supplemented by a history of symptoms both past and present. Special emphasis was placed on symptoms characteristic of acute asphyxiation as well as those of relatively slow asphyxiation and also on the relation of these symptoms to the time of exposure. As the clinical phenomena are almost entirely subjective in simple or uncomplicated carbon monoxide anoxemia the physical examination yielded little additional information. However, valuable data were obtained in cases accompanied, or followed by demonstrable organic lesions attributed either to the secondary effects of acute asphyxiation or to moderately severe chronic exposure.

As symptoms of acute asphyxiation are well known, they need not be discussed in detail. It is a noteworthy fact that the more severe the gassing the fewer the symptoms, since coma or death soon supervenes. Both may occur almost instantaneously, without premonition. It is in those cases in which the gassing has been less severe, more protracted, and frequently repeated that the greatest variety of symptoms are encountered.

PRELIMINARY STUDIES

In order of frequency the leading symptoms based on an analysis of 150 cases previously studied were: headache, weakness, vertigo, nervousness, dyspnea, paresthesia, muscular twitching, emotionalism, nausea, drowsiness, unsteady gait, neuromuscular and joint pains, tremor, muscular cramps, cough, sweats, vomiting, insomnia, anorexia, precordial distress, vasomotor instability, perversion of taste and smell, speech defect, impairment of hearing, hoarseness, and yawning.

Naturally, all of these symptoms do not occur in the same individual at any given time. The number and variety depend primarily upon the quantity of carbon monoxide in the air and the length of exposure, and secondarily, upon the activity and susceptibility of the individual and the amount of carbon monoxide in the blood, as well as upon many other factors involved. Their significance is enhanced by the fact that the individual has been exposed to gas; that the symptoms developed during the course of the exposure and that they subsided within a reasonable time in the open fresh air where they were no longer exposed. In the milder cases of short duration such symptoms as headache, weakness, vertigo, numbness, drowsiness, staggering gait, or nausea, abated in fifteen to twenty minutes and the individuals were often completely relieved in several hours; whereas, in individuals daily exposed over periods of weeks or months the symptoms did not subside as promptly. Complete restoration may not take place for days or weeks after the last exposure.

In simple anoxemia from exposure to carbon monoxide, only those symptoms which yield to the replacement of carbon monoxide in the blood by atmospheric oxygen can be ascribed to the gas. Symptoms which persist under the influence of oxygen are either due to some concurrent disease or are manifestations of tissue damage, especially involving the central nervous and cardiovascular systems and are incidental to severe acute anoxemia or to less severe, slow, protracted (chronic) anoxemia.

Table 1 shows the distribution of these cases, and the source of the gas.

TABLE 1
SLOW CARBON MONOXIDE ASPHYXIATION
(Study of 150 Cases)

Distribution of Cases	
West Virginia	96
Maryland	42
Pennsylvania	5
Ohio	4
New Jersey	1
Kentucky	1
Oklahoma	1
	150
Source of Carbon Monoxide	
Natural gas	91
Illuminating gas	28
Automobile exhaust	19
Automobile and natural gas	6
Automobile and illuminating gas	2
Coke and coal	3
Blast furnace	1
	150

PATHOLOGIC PHYSIOLOGY

Carbon monoxide chemically considered is non-toxic. Its injurious action is due indirectly to its extraordinary affinity for hemoglobin because of which the oxygen of the oxyhemoglobin molecule is replaced by carbon monoxide, thus producing a state of anoxemia. The symptoms which arise are due primarily to mere oxygen want and secondarily, to the anoxemic lesions produced through oxygen deprivation.

Structures endowed with a rich blood supply, such as the central nervous system and the myocardium, normally utilize more oxygen than those less abundantly supplied; consequently, in states of anoxemia the tissue damage in these organs is relatively more pronounced.

Cerebral congestion and edema account for some of the early symptoms including headache, dizziness, nausea, vomiting, coma and convulsions. The later neuropathologic lesions depending upon degenerative changes cause multiple syndromes. Among these encephalitis, usually of the Parkinsonian type, is one of the most outstanding.

Symptoms suggestive of multiple sclerosis, such as tremor, scanning speech, spasticity and sphincter disturbance, have also been reported. Ophthalmoplegia and paralysis of the hemiplegic and monoplegic types have been noted. Mental and emotional disturbances ranging from memory defects and mild confusional states to advanced forms of psychosis have been described.

Other neurologic manifestations include cerebral thrombosis, multiple neuritis, or tetany. Among the ophthalmologic manifestations are amblyopia, anisocoria, retinal edema, diplopia and neuroretinitis.

The effects of carbon monoxide are primarily manifested in the vascular system. There occurs dilatation of the peripheral vessels, slowing of the blood stream, increased permeability of the vessel walls with hemorrhage, perivascular infiltration and edema. Small punctiform hemorrhages are characteristic and may occur in any organ of the body. Arterial spasm, thrombosis and gangrene may develop. In the heart there is a predilection for lesions to occur in the papillary muscles of the mitral valves and in the wall of the left ventricle. Coronary thrombosis has been observed clinically and at autopsy. Associated lesions of infarction and softening lead to cardiac dilatation and congestive heart failure.

CLINICAL MANIFESTATIONS

In the preliminary studies, which comprised a series of 150 cases, the symptoms have been grouped according to special domains; the most important are the central nervous, the neuromuscular and the cardiovascular systems. Most of the symptoms are characteristic of simple anoxemia. Others are manifestations of some organic lesion of the central nervous system, including encephalitis, epilepsy, cerebral thrombosis, multiple sclerosis, and tetany. Neuromuscular and joint pains are quite common and painful spasmodic contraction of the muscles of the leg and tendons of the toes is fairly characteristic; likewise spasm of the involuntary muscles, especially of the sphincter muscles of the gastrointestinal tract. A significant symptom is fibrillating bundles of muscle fibers which occurred in one-third of the cases, usually in the simple uncomplicated chronic forms. Table 2 shows the relative frequency of encephalopathies occurring in individuals exposed to carbon monoxide, as compared to the average incidence compiled from the hospital records and Diagnostic Clinic.

TABLE 2

INCIDENCE OF CARBON MONOXIDE ENCEPHALOPATHIES

Hospital	Admissions	Encephalitis	Epilepsy	Tetany	Multiple sclerosis	Ratio
	83,685	47	...	.	..	1-1819
Union	.....	..	101	.	..	1-828
Memorial*	.....	..	...	4	..	1-20921
	.....	..	...	.	24	1-3487
	8,112	41	...	.	..	1-198
Diagnostic	.....	..	55	.	..	1-1475
Clinic**	.....	..	...	6	..	1-1352
	.....	..	...	.	6	1-1352
Carbon	150	13	...	.	..	1-12
Monoxide	.....	..	9	.	..	1-17
Group	.....	..	...	2	..	1-75
	.....	..	...	.	3	1-50

*Union Memorial Hospital is a general hospital and admits all classes of patients. The Diagnostic Clinic is devoted chiefly to internal medicine.

**Exclusive of carbon monoxide cases.

Symptoms referable to the cardiovascular system ranked second to the central nervous and neuromuscular systems. The most important findings in this group were precordial pain, dyspnea, palpitation, arrhythmia, cardiac hypertrophy, anginal attacks, and coronary thrombosis. In several instances, angina pectoris occurred only during periods of exposure to the gas. Prompt and complete cessation of attacks followed change of residence or improvement in heating conditions. There is a gradual increase in the literature of reports of cases of coronary thrombosis, following exposure to carbon monoxide; the amount of gas need not be sufficient to produce unconsciousness. These studies showed that the effect of prolonged exposure had a tendency to lower the blood pressure and to slow the pulse rate.

Gastrointestinal symptoms such as nausea, vomiting and anorexia are common. On account of cardiospasm, pylorospasm, and epigastric pain, symptoms which are often associated with food ease and hunger pain, ulcer may be suspected. There were seven of these so-called "pseudo ulcer" cases in this group in which complete studies failed to demonstrate an active ulcer. Several of these patients who had failed to respond to ulcer treatment were promptly relieved by correcting heating conditions in the home or by complete change of environment. In five other instances a definite diagnosis of ulcer was made. Whether the exposure to gas has an etiologic relation to the ulcers is problematic. Further studies are necessary.

In the urogenital domain, bladder disturbances, especially nocturia and dysuria, were not infrequent. Albuminuria occurred in 30 patients; in only five was it associated with casts. Glycosuria which is frequently observed in acute asphyxia, occurred in 18. Hematuria also occurs more frequently in acute asphyxia. In regard to menstrual function, no noteworthy symptoms were observed. Impotence was the chief complaint in several patients.

The ophthalmologic findings are important, especially with respect to their relation to lesions of the central nervous system. They were especially significant in cases associated with encephalitis. Ambylopia was usually transient and occurred during periods of, or immediately following, exposure to gas. Cases simulating exophthalmic goiter with symptoms of hyperthyroidism, including exophthalmos and positive von Graefe, occurred in the series. However, there was only one instance of true toxic goiter with basal metabolism increased above normal.

METABOLISM

Metabolic studies showed a decided trend to lowering of the basal metabolic rate, increase of fasting blood sugar, and a slight decrease of total blood cholesterol. The only instance among 75 patients examined showing a basal rate above normal was that of a patient with exophthalmic goiter.

The total blood cholesterol in 14 patients examined was normal in nine, subnormal in four and elevated in one case.

BLOOD

In this group of individuals, most of whom lived indoors in a vitiated atmosphere, many presented symptoms suggestive of anemia; namely, headache, dizziness, weakness, palpitation, dyspnea, or paresthesia, although the blood showed an increase in hemoglobin and red cells. The increase in hemoglobin was relatively less marked than the increase in the red cells. No special change was noted in the morphology of the red cells and no characteristic changes were noted in the white cells.

A more detailed description of the clinical aspects of carbon monoxide anoxemia will be found in my several published articles.

SUMMARY OF ENGINEERING SURVEY

In 125 homes and shops investigated, 784 appliances were tested by S. M. A. carbon monoxide detector for the generation of carbon monoxide. In 78 of the premises inspected, one or more appliances were found defective in that they produced carbon monoxide. Twenty-one per cent of all appliances examined and tested were discharging carbon monoxide into the room. The amount discharged was 300 or more parts per million (p.p.m.) in 10 per cent;

750 or more p.p.m. in 5 per cent, and 1500 or more p.p.m. in 3 per cent.

Seventy-eight per cent of the side arm heaters, 33 per cent of the radiant type heaters, and 27 per cent of the kitchen type ovens generated carbon monoxide. Practically every gas plate and range burner generated carbon monoxide when the flame impinged on the bottom of a cold vessel.

The advantage of proper venting was well illustrated by the fact that 26 per cent of the appliances not vented were discharging carbon monoxide into the room, whereas, only nine per cent of those vented were discharging carbon monoxide. Seventy-four per cent of all appliances were not vented.

This engineering survey was made under the direction of Edmond T. Roetman of the West Virginia Bureau of Industrial Hygiene.

CLINICAL SURVEY

During the survey, January, February, and March, 1940, the health of 279 individuals who were living under the environmental conditions disclosed by the engineering investigation was studied. Among these 142 were asymptomatic as far as the effect of carbon monoxide was concerned. One hundred and thirty-seven gave a history of either existing or pre-existing symptoms suggestive of carbon monoxide anoxemia. In 138 instances, an odor of gas was detected either in the home or in connection with their respective occupations. Sixty-two were exposed to gas in both the home and in their occupation. Thirty-six slept during cold winter nights in rooms with gas burning in open heaters which were usually unvented. Others slept with gas burning in adjacent rooms with communicating doors open. Seventy-five definitely stated that their health was better in summer than in winter, and 71 that they felt better when outdoors than indoors. Among the latter, 58 were in the habit of going outdoors into the fresh air or opening the windows for the sake of getting relief from their symptoms. There were only 13 who considered their health better in winter than in summer, and seven who stated that they felt better indoors than outdoors. These latter groups comprised chiefly the aged and chronic invalids of various types and several who worked continuously summer and winter at the gas wells.

This survey was made under the direction of Dr. George M. Suter, of Baltimore.

For the purpose of clinical discussion, the cases will be classified into two major groups:

1. *Non-anoxemic or asymptomatic group*: Cases without a history of the characteristic symptoms of carbon monoxide anoxemia.
2. *Anoxemic or symptomatic group*: Cases with a history of the characteristic symptoms of carbon monoxide anoxemia.

NON-ANOXEMIC OR ASYMPTOMATIC GROUP

This group may be subdivided on the basis of whether or not blood examinations were made for carbon monoxide saturation. The engineers tested all gas appliances in each home investigated for the escape of carbon monoxide, but in the beginning of the survey, tests for carbon monoxide in the blood were only made in those occupants who manifested symptoms. In this sub-group, there were 101 individuals who had never experienced symptoms attributable to the gas and for that reason no blood determinations for carbon monoxide were made.

In the second sub-group comprising 38 individuals, tests were made for both escaping carbon monoxide from defective gas appliances and for carbon monoxide in the blood. This group may be further subdivided:

(a) Those who lived in an atmosphere in which the maximum carbon monoxide produced from gas appliances (gas burning at the customary rate) did not exceed 50 parts per million (p.p.m.) and whose blood did not show the presence of carbon monoxide (15 cases).

(b) Those which showed a maximum of 100 p.p.m. of carbon monoxide from defective appliances and less than 5 per cent in the blood (eight cases).

(c) Those which showed a maximum of 250 p.p.m. from defective appliances and from 5 to 8.7 per cent in the blood (16 cases).

There were no cases with a blood saturation of more than 8.7 per cent who did not give a history of periodic symptoms of anoxemia.

In this group of 142 asymptomatic cases, there were 62 instances in which the engineers failed to detect any gas discharging from appliances with the burners regulated for usual consumption. In 78 cases with the burners similarly regulated, the quantity of carbon monoxide produced did not exceed 250 p.p.m. However, when the gas was turned on to full capacity for the particular appliance, higher readings were often obtained; in some instances as high as 1500 p.p.m. were recorded. The absence of symptoms under these exceptional circumstances was attributed to the location of the appliances, as for example, a hot water heater in the basement or a gas heater in an unoccupied bedroom.

There is a non-anoxemic sub-group with symptomatic manifestations of unrelated diseases. This group represents a number of individuals who did not give a history or exhibit any of the usual symptoms of carbon monoxide anoxemia but presented symptoms ascribed to other disease conditions. Included in this list were three cases each of anemia and hypertension, two each of arteriosclerosis and menopause, and one each of myocarditis, angina pectoris, congenital heart disease, asthma, nephritis and vesical calculus.

ANOXEMIC OR SYMPTOMATIC GROUP

This group may be divided into three subgroups: (a) Simple carbon monoxide anoxemia; (b) carbon monoxide anoxemia with associated co-existing diseases; (c) carbon monoxide anoxemia with complications and sequelae.

Simple Carbon Monoxide Anoxemia: Of the 137 patients presenting symptoms, the majority were classified as simple uncomplicated anoxemia. The diagnosis was based on the following criteria: (1) That they were definitely exposed to gas; (2) that in severity the symptoms were proportional to the amount of gas in the air and the duration of exposure, or both; (3) that the symptoms completely subsided when the individuals were no longer exposed; (4) that corroborative evidence of the presence of carbon monoxide was established whenever possible by an analysis of the air and blood; (5) and finally by the exclusion of any concomitant disease.

The symptomatic manifestations can conveniently be described under the following headings: (1) Central nervous and neuromuscular; (2) cardiovascular; (3) gastrointestinal; (4) urogenital; (5) ophthalmologic; (6) hematologic.

Central Nervous and Neuromuscular Manifestations: The outstanding symptoms of carbon monoxide anoxemia are referable to the central nervous and neuromuscular systems. In order of frequency they conform closely to those obtained in a series of 150 cases included in the preliminary studies. Headache, weakness, vertigo, nervousness, drowsiness, paresthesia, unsteady gait and muscular fibrillation in both instances were among the leading symptoms and occurred in a significant number of cases.

Other symptoms which occurred relatively frequently in the simple form were tremors, sweats, insomnia, fears and other emotional upsets, impairment of memory, and speech defects. In the most severe and acute forms, syncope, semi-coma and coma were noted. The headache was usually described as a feeling of pressure or band-like constriction sometimes accompanied by a throbbing sensation.

Weakness, though general, was most noticeable in the lower extremities; in conjunction with vertigo, it contributed to the disturbance of gait which was often of a staggering type with a tendency to fall. These symptoms often preceded syncopal attacks. An interesting phenomenon was fibrillation of muscular fasciculi, of which these individuals often complained. Another common complaint was numbness and tingling, especially of the extremities. Emotional disturbances, particularly fear, were observed in a number of cases. Some suffered from drowsiness, others from insomnia.

Fifty-nine individuals complained of neuromuscular and joint pains (myalgia, ar-

thralgia) with principal involvement of the extremities. Forty complained of cramps in the legs, chiefly in the calf muscles, and in 23 the feet and toes were affected by painful spasmodic contractions. In only two patients did cramps occur in the fingers.

All of the symptoms enumerated may occur in this group of simple, uncomplicated carbon monoxide anoxemia and will disappear within a short time after carbon monoxide is eliminated from the blood.

Cardiovascular Manifestations: The symptoms referable to the cardiovascular system were comparatively few, the leading ones being dyspnea, palpitation and cough. Other symptoms which occurred less frequently were persistent yawning, precordial distress and asthmatic wheezing. These symptoms are either primary and functional in character owing to simple anoxemia, or secondary owing to organic lesions of the myocardium. The latter may be purely incidental and unrelated, or they may be residual manifestations or complications of an acute or chronic anoxemia.

Gastrointestinal Manifestations: Among these symptoms, nausea, vomiting and anorexia predominated. Other symptoms included pyrosis, pain in the epigastrium, and constipation. A number simply complained of indigestion.

Urogenital Manifestations: The only noteworthy findings were nocturia, albuminuria and glycosuria. The latter is often transient in character but may become permanent. There were five cases of true diabetes in the series, one of which developed after an attack of encephalitis. Impotence, which is an occasional complaint, occurred in three instances.

Ophthalmologic Manifestations: Among the common symptoms which occurred in the uncomplicated form were dimness of vision, transient blindness, "burning of eyes," twitching eyelids and muscae volitantes. Other manifestations which occurred in severer forms as complications or sequelae, were diplopia, scotoma, nystagmus, anisocoria, and retinal vascular changes.

Carbon Monoxide Anoxemia with Coexisting Diseases: In this group, the clinical syndrome of carbon monoxide anoxemia was associated with symptoms referable to other diseases such as nephritis, chronic cholecystitis, duodenal ulcer, spastic colitis, pyelitis, chronic prostatitis, cystitis, appendicitis, bilateral cataract, arteriosclerosis and hypertension. These conditions occurred as separate and distinct entities and were not ascribed to the effects of the gas.

Carbon Monoxide Anoxemia with Complications and Sequelae: In the entire series of cases studied there were ten instances in which a history was obtained of syncopal or fainting attacks, with transient loss of consciousness. There were four with coma following acute asphyxiation. One patient was described as having been semi-comatose. In the neurologic domain, the most vulnerable to the action of carbon monoxide, there occurred two cases with well-defined symptoms of encephalitis, one of meningo-encephalitis, one of multiple sclerosis, one of cerebral thrombosis, one of mild epileptiform seizures and four of peripheral neuritis. Illustrative of this group is the following case.

CASE NO. 1

A male, aged 29, tinner, had been exposed to gas for the past three years in his shop, and while repairing furnaces, worked on an average of eight hours a day. In the winter of 1937 he developed symptoms of multiple sclerosis, began to complain of dimness of vision, vertigo and ataxia. Shortly afterwards, while working in a basement heated by a "salamander," he became asphyxiated and remained unconscious for about one hour. Three weeks after recovery from the acute symptoms he became totally blind. His sight returned in a week but it has never been restored to normal. Neurologic manifestations soon developed, including bitemporal disk pallor, diplopia, slight nystagmus, mild intention tremor, ataxia, heightened reflexes, bilateral Babinski, ankle clonus, slight adiadochokinesis and loss of abdominal and scrotal reflexes. Among the outstanding symptoms were headache, dysarthria, asthenia, vertigo, stupor, memory defect, vague hallucinations coupled with fear, paresthesia, vesico-spasm with loss of bladder control and impotence. The blood count was normal and Wassermann was reported negative.

A specimen of blood taken four hours after exposure showed a carbon monoxide concentration of 17.8 per cent. Heaters tested in the home showed only 50 p.p.m. of escaping gas. The chief source of

gas was from furnaces he was repairing in other homes.

BLOOD STUDIES

These studies were undertaken with the object of correlating the blood picture with the clinical history and the carbon monoxide content of the blood in order to determine whether the amount of carbon monoxide in the blood could have any definite pathologic or diagnostic significance.

An analysis suggests a relation with respect to the effect of carbon monoxide upon the hemoglobin and red cells. Both show a tendency toward an increase proportional to the amount of carbon monoxide in the blood. Eighteen per cent showed a hemoglobin content of 90 per cent or more in cases without demonstrable carbon monoxide in the blood, whereas 28.3 per cent with variable amounts of carbon monoxide in the blood showed 90 per cent or more hemoglobin.

The effect upon the red cell count is even more pronounced. Assuming 4,500,000 to be a fair average count for normal individuals living mostly indoors, an analysis of 115 consecutive cases shows a very decided trend to erythrocytosis proportional to the increase of carbon monoxide in the blood as follows: 42 per cent showed no carbon monoxide in the blood; 84 per cent showed 0-10 per cent carbon monoxide blood saturation; 78 per cent showed 10-36.6 per cent carbon monoxide blood saturation.

The converse also holds true. States of anemia with 4,000,000 or less red cells occurred in: 27 per cent with no carbon monoxide in the blood; 9 per cent with 0-10 per cent carbon monoxide blood saturation; 0 per cent with 10-36.6 per cent carbon monoxide blood saturation.

The foregoing figures are based on the total number of cases studied. The results are somewhat modified by dividing them into two separate groups; namely, those individuals exposed only to carbon monoxide gas in the home or shop, and those who in addition were exposed to natural gas at the wells where they were employed.

In the former "carbon monoxide group" (111 cases), 16 per cent, had over 90 per cent of hemoglobin. In the latter "natural gas group" (22 cases), 76 per cent, had over 90 per cent of hemoglobin.

Likewise in the former ("carbon monoxide group") 51 per cent had a red cell count of over 4,500,000 and in the latter ("natural gas group") 95 per cent had over 4,500,000 red cells.

Noteworthy changes were also found in the morphology of the white cells in those exposed to raw, natural gas. An outstanding feature was the presence of an eosinophilia. In 22 cases the differential counts averaged 6 per cent, the highest being 17 per cent, whereas in 99 cases of the carbon monoxide group the average was 1 1/3 per cent. The following case is an example of the latter group exposed to natural gas:

CASE NO. 2

A white male, aged 49, engineer, for the past eleven years was exposed to natural gas on an average of eight hours daily, working in a compressing plant. He was also exposed somewhat to gas in the home, having slept with gas burning in his room in cold weather. He was "gassed" several times with natural gas in his occupation. After two years' exposure he became weak, nervous and irritable, and for four months suffered with headache, vertigo, ataxia, transient blindness, tremors and pain in the back and neck. His blood pressure was elevated. Physical examination was negative except for moderate hypertension, mild arteriosclerosis and a carbon monoxide blood saturation of 2.7 per cent.

Blood examination showed 108 per cent hemoglobin; 5,020,000 red cells and a differential count of 47 per cent polymorphonuclears, 35 per cent lymphocytes, 17 per cent eosinophiles and 1 per cent basophiles. The red cells and platelets were reported normal.

Additional records of clinical cases appear in the official report of the Survey, which also contains a comprehensive review of the pathologic and clinical aspects of carbon monoxide anoxemia, with references to the literature on the subject.

DISCUSSION

Dr. H. Randolph Unsworth (New Orleans): Dr. Beck has mentioned several things about which I would rather like to comment. I am of the opinion that an interpretation of what happens to a central nervous system is incomplete without spinal fluid investigations, and especially in reference to multiple sclerosis. The second thing of interest is the psychotic manifestations. Were they temporary or permanent? I am wondering if the hemolytic destruction caused by the chronic gas toxemia showed blood changes that could have

suggested a combined sclerotic neurologic clinical picture?

Dr. Oscar W. Bethea (New Orleans): Dr. Beck has requested that I discuss his paper.

I have followed the work of Dr. Beck in his study of carbon monoxide for several years and have been much impressed with the extent of his investigation and the excellence of his presentations.

I agree with him that cases of acute poisoning are comparatively rare but I do not believe that we can estimate the number of subclinical cases; that is, those with impaired well-being through the long continued exposure to small amounts of this gas.

I get the impression from recent reports that the use of gas heaters burning in the home or working quarters accounts for a large percentage of this group.

I believe that Dr. Beck is doing an important work and should receive unlimited encouragement not only in carrying forward his investigation but in disseminating his findings among those most concerned.

Dr. Beck (In closing): In regard to Dr. Unsworth's inquiry concerning multiple sclerosis, I should like to call attention to some studies in asphyxia which were published in U. S. Public Health Bulletin Number 211. The article contains many illustrations showing lesions of the central nervous system in a series of experiments on dogs subjected to comparatively slow asphyxia from carbon monoxide. Among the injurious effects produced were edema of the brain, perivascular infiltration, hemorrhage, cystic degeneration and scar formation. There are many other experimental proofs as well as autopsy findings showing pathologic changes in the brain, meninges and spinal cord.

In regard to symptoms of multiple sclerosis, the case cited in the text of the paper, which time did not permit me to read, is an example.

Among the 279 patients clinically investigated during the recent survey, a certain number showed definite evidence of neuropathologic changes as well as cardiovascular disease.

My chief interest has been in the study of individuals with chronic ailments who were exposed daily to carbon monoxide, and who have failed to respond to any treatment as long as they were subjected to the gas. I have found ample evidence in these studies to warrant the conclusion that carbon monoxide may produce chronic lesions. The complete report, which will be published later, contains numerous references in support of this view. I have not added much that is new, but have been able to confirm most of the claims made in these published reports.

The object of the survey was to study the relation of the combustion products of natural gas to public health, from both the engineering and clinical standpoint. The results show that carbon monoxide from improper combustion of natural gas, chiefly through defective heating appliances, is often responsible for chronic states of ill health, and constitutes a problem which needs further study and investigation.

MYOCARDIAL DYSFUNCTION DUE TO VITAMIN B_1 (THIAMIN HYDROCHLORIDE) DEFICIENCY*

ALLAN EUSTIS, M. D.
NEW ORLEANS

This syndrome is usually referred to as "beriberi heart," but inasmuch as it occurs in deficiency diseases other than beriberi, this is manifestly a misnomer. However, it is a constant accompaniment of beriberi, and a short résumé of the present knowledge of this subject may not be amiss.

In the latter part of the 19th century Takaki was able practically to eliminate beriberi—a common occurrence—from the Japanese Navy, by adding more meat and vegetables to the sailors' diet and by replacing the customary polished rice in part by wheat and barley. This led to the investigations of Christiaan Eijkman[1] in the Dutch East Indies (1897), who concluded that beriberi resulted from the continuous consumption of polished rice, leading later to his discovery of an experimental disease closely simulating human beriberi, which he called "polyneuritis gallinarum," produced in birds on an exclusive diet of polished rice and relieved promptly by forced feeding of the birds with rice polishings. He suggested a toxic basis for the disease, but his successor, Gerritt Grijns (1901), was able to correct this toxin theory by showing that beriberi was caused, not by a poison, but by a deficiency of an essential nutrient in the diet contained in the discarded cortex. Fresh interest in the etiology and cure of beriberi was aroused by the publications of Hopkins (1906), Fletcher (1909), Fraser and Stanton (1909), and others. Finally, Casimir Funk[2] (1911) isolated from rice polishings a crystalline substance which promptly relieved the symptoms of "polyneuritis gallinarum." In-

*Read before the sixty-second annual meeting of the Louisiana State Medical Society, Shreveport, April 22, 1941.

asmuch as he was able to demonstrate the presence of an amine group in the substance and on account of its life sustaining qualities he called it "vitamine." He suggested that besides beriberi, scurvy, rickets and pellagra were due to deficiency of vitamins, and that cure of these diseases would depend upon the discovery of vitamins similar to his anti-beriberi vitamin. While McCollum and others questioned the purity of Funk's "vitamine" and were able to prove that other essential food factors were certainly not amines the term vitamin has been accepted as a generic term to denote these essential food factors without any implication that they are even remotely allied to amines. In 1921, at the suggestion of Drummond the "e" was dropped from vitamine and the present terminology universally accepted.

The nutritional studies of Osborne and Mendel[3] and of McCollum and Davis[4] resulted in the acceptance of a fat soluble vitamin A and a water soluble vitamin B. "This simple primary concept of the unique nature of vitamin B was soon replaced by one more intricate, for evidence soon accumulated to show that this vitamin B was not a single substance but a complex containing a heat-labile growth-promoting component requisite for the prevention of polyneuritic symptoms in rats and pigeons (vitamin B_1) and a heat-stable growth-promoting component necessary for the prevention of dermatitis in rats."[5] More recently (1937) Cline and Williams[6] were able to identify vitamin B_1 as thiamin chloride and were able to synthesize the substance; today, most of the pharmaceutical houses market synthetic thiamin chloride, which has been accepted by the Council on Pharmacy and Chemistry of the American Medical Association as identical with vitamin B_1.

I first became interested in beriberi and vitamins in 1912 while collaborating with Wellman and Bass[7] in research on the relation of Louisiana rice to beriberi. About this time I saw a case of fatal beriberi at the City Hospital for Mental Diseases, with Hummel; at autopsy, by Duval, I was struck by the flabby condition of the heart, dilatation of which was designated by Duval as the cause of death. The impression made upon me by this case has given strength to my belief, which I have taught for many years, that a balanced diet containing sufficient vitamins is essential in the treatment of all diseases. I now believe that the favorable results reported by me[8] from time to time, in the treatment of myocardial insufficiency have been due to this fact as much as to other measures which I have advocated.

However, case 1, diagnosed by Tripoli as "beriberi heart," and seen by me in consultation, impressed me with the idea that this syndrome is probably more common than we realize. Case 2, which may be classed as a "guinea pig" case, convinced me of this fact, and is the reason for this article. Scott and Herrmann,[9] in 1928, in an outbreak of beriberi in this state, reported the cardiac manifestations, but the careful observations of Alsmeer and Wenckebach[10] in 1929, and, later the publication by Wenckebach[11] of his monograph, "Das Beriberi - Herz" (1934), gave the first exact knowledge of the symptomatology and pathologic findings in so-called beriberi heart. Wenckebach lists the symptoms as: (1) Cardiac enlargement; (2) precordial and apical systolic murmur, sometimes also diastolic murmur, increased by exertion; (3) throbbing pulsation over the precordium and a bounding pulse in the great arteries; (4) distended neck veins and enlarged and painful liver. At autopsy there was dilatation of the right side of the heart, and an interstitial edema of the heart muscle was universally found.

Wenckebach was impressed by the absence of any significant change in the electrocardiogram. Weiss and his co-workers,[12] as well as Strauss,[13] Langeron,[14] Winans[15] and others, have added to our knowledge so that today the characteristic symptoms and signs may be accepted as follows: Dyspnea on exertion, with tachycardia; palpitation with gallop rhythm; prominent cardiac and epigastric pulsations; bounding peripheral pulses, and edema out of all proportion to

the demonstrable cardiac dysfunction. The cardio-respiratory test at this time is of inestimable value in demonstrating myocardial inefficiency. The skin is often flushed and warm. The heart is usually enlarged, but is sometimes normal in size. Venous pressure is usually elevated. There may be abnormal electrocardiograms, the chief abnormalities being change in direction of T waves, tachycardia or prolonged Q-T interval. Anginoid pains may also be complained of. There is usually scant excretion of concentrated urine, not affected by fluid intake, and which promptly changes to polyuria on treatment with thiamin hydrochloride. Fatal cases result from dilatation of either the right or left side of the heart, but usually from right-sided failure. Mild cases may present edema of ankles only, and dyspnea only on exertion.

TREATMENT

The results of treatment are spectacular, which is well demonstrated by case 2. Thiamin hydrochloride in doses of 10 mg. to 60 mg. daily, administered parenterally, depending upon the severity of the case, will often show improvement within a few hours, this being manifested by less dyspnea, lessened edema, and increased excretion of a dilute urine. After the acute symptoms are overcome the vitamin may be administered by mouth in 3 mg. doses three times daily, and a potent diet prescribed. Thiamin does not replace other measures of sustaining cardiac function, and it is questionable if it has any effect at all on other forms of heart disease; although Jones and Sure,[16] in a study of 30 cardiac patients, (14 arteriosclerotic, nine hypertensive, seven myocardial), found that less medication was needed to sustain the heart when thiamin was administered than is observed in the general run of cases. Inasmuch as it is non-toxic, thiamin hydrochloride certainly should be administered in all cardiac cases. Weiss[12] stated as early as 1937 that many cases of myocardial heart failure are due to an unbalanced diet, especially one deficient in the B complex, particularly B_1. Many obscure cardiac conditions resemble the "beriberi heart" and the symptoms clear up within 24 hours after the administration of crystalline vitamin B_1, along with routine measures. Prophylactic treatment should interest the medical profession more than at present, and should be effective. Cowgill[17] has developed a formula for determining the vitamin B_1 requirement of man, but I am inclined to agree with Sherman[18] that if half the food calories are derived from milk, eggs, fruits, vegetables and un-denatured cereals, an ample supply of vitamin B_1 will be provided. It must be borne in mind that absorption of the vitamin is as important as the food content, and also, that alcohol and a high carbohydrate diet increase the thiamin requirement. The nuclei of cells are especially rich in vitamin B_1, which explains why whole cereals, green vegetables, liver, kidney and sweetbreads are more potent than muscle fiber.

The vitamin is soluble in water and is readily oxidized by heating in contact with air, so that the proper cooking of food is just as important as the vitamin B_1 content. The water drained from green vegetables will often contain more vitamin B_1 than the cooked vegetable, and this fluid should be utilized in making soups and gravies, as well as in cooking meats.

Considerable chemical research is being conducted in an effort to determine the absolute content of vitamin B_1 in various food stuffs, and the thiochrome test has assisted considerably, but at present we must rely upon the results obtained by feeding experiments on lower animals for our knowledge of vitamin B_1 content of foods.

The chart on the following page will be of material assistance however.

CASE NO. 1

R. T. McD. was admitted to Touro Infirmary on May 3, 1939, and discharged May 12; readmitted June 17, 1939, discharged June 25, on the service of Dr. Tripoli. This patient was a white male, 39 years of age, who complained of dyspnea and edema of the ankles. He admitted excessive drinking of alcohol. The heart was enlarged on percussion, transverse diameter measuring 16 cm.; no murmurs audible. Pulse 120; blood pressure in recumbent position 145/90; in sitting position 110/70. Response to cardio-respiratory test very poor. Venous pressure—230 mm. water. Electrocardiographic tracing showed QRS wave slurred in the second lead and T wave low in

FOOD SOURCES OF THIAMIN (VITAMIN B_1)

Type of Food	Excellent Sources	Good Sources	Fair Sources
Animal products.	Lean pork, chicken, kidney, liver.	Egg yolks, brains, lean beef, lean mutton, fish roe, codfish, sardines, whiting.	Fresh milk (whole or skim).
Vegetables.	Green peas, green lima beans.	Sweet corn, brussels sprouts, cauliflower, cabbage, mushrooms, spinach, turnip greens, water cress, garden cress, lettuce, collards, kale, onions, leeks, tomatoes, wax and green beans, parsnips, beets, carrots.	Turnips, broccoli, kohlrabi, eggplant.
Fruits.		Prunes, avocados, pineapples, oranges, grapefruit, tangerines, dates, figs, plums, pears, apples, cantaloupes.	Bananas, watermelons, raspberries, blackberries.
Seeds.	Wheat germ, corn germ, rye germ, rice polishings, wheat bran, rye, barley, brown rice, peanuts, soy beans, cowpeas, navy beans, dried peas.	Hazelnuts, chestnuts, Brazil nuts, walnuts, almonds, pecans.	

second lead and sharply inverted in third lead, with "definite evidence of myocardial disease." On May 3, fluoroscopic examination of the chest revealed, "a definite increase in the transverse heart diameter and a moderate diffuse dilatation of the thoracic aorta." Rest in bed, with digitalis, full diet, thiamin chloride and diathermy to the heart gave prompt relief of symptoms. Fluoroscopic examination of the chest on May 6, showed the heart diameter to be within normal limits, measuring 14.4 cm. with slight diffuse dilation of the thoracic aorta. He was discharged May 12, 1939, symptom-free, but with a poor response to the cardio-respiratory test, which denoted myocardial insufficiency was still existent. Accordingly, a discharge diagnosis was made of cardiac insufficiency and arteriosclerotic heart disease. On re-admission I saw him in consultation with Dr. Tripoli, from whom I learned that the patient had returned to his alcoholic tendencies and had been subsisting almost exclusively on meat and potatoes. He was in the identical condition in which I had first seen him and his response to the cardio-respiratory test was very poor. The electrocardiographic tracing June 20, 1939, showed QRS slurred in second lead and T wave flat in first and second leads, and inverted in third lead, with "definite myocardial disease."

Laboratory data: Urine examination negative. Red blood cells 4,600,000; white blood cells 7000; hemoglobin 80 per cent; S. M. 34, L. M. 6; N. 58, E. 2; hematocrit 41 per cent.

Venous pressure was 120 mm. of water, and a poor response to the cardio-respiratory test on June 19. Dr. Tripoli put him on 18 mg. of thiamin intramuscularly daily, with two capsules of vitamin B complex three times a day and a carefully controlled diet to furnish all vitamins. The improvement was spectacular and his response to the cardio-respiratory test was normal on June 23. He was discharged with a diagnosis of "beriberi heart." I did not see him again until October 21, 1940, during which time he had an electrocardiographic examination made in Houston, which was pronounced normal. However, he now had a return of dyspnea and edema of the ankles and his response to the cardio-respiratory test was very poor. He had not taken any vitamins for several months and was drinking excessively and eating mostly meat, or fish and potatoes. He was instructed to resume the thiamin which Dr. Tripoli had prescribed and to moderate his intake of alcohol. His next examination on January 15, 1941,

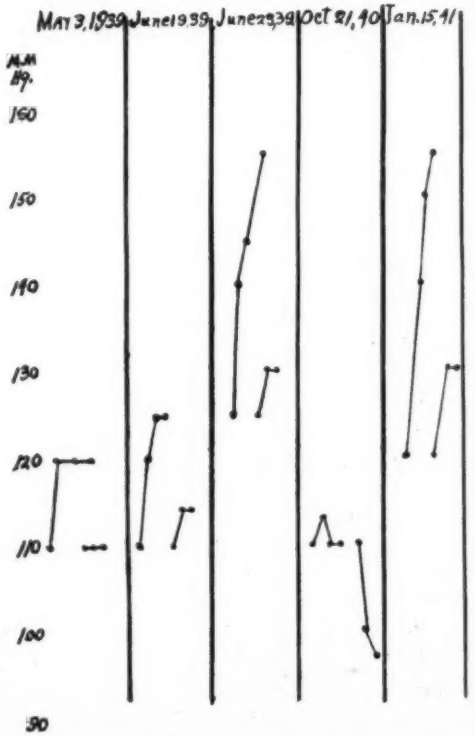

Fig. 1. Cardio-respiratory test of R. T. McD.

revealed an apparently normal heart with a normal response to the cardio-respiratory test.

CASE NO. 2

J. T. D., a white male, 54 years of age, was admitted to Touro Infirmary January 19, 1941, on the service of Dr. Hilliard Miller. He was discharged, after appendectomy, on January 31, 1941. I had observed this patient at frequent intervals since 1929. At no time had he shown any evidence of myocardial disease, but he had had a chronic appendix which caused minor digestive disturbances. However, since March, 1940, he had been having increasing pain in the epigastrium and was finally persuaded to allow Dr. Miller to remove the appendix. Prior to admission he had been living on a very restricted diet of milk, crackers and denatured cereals forming his principal food; not indulging in green vegetables on account of fear of flatulency. He was operated on January 21, 1941, when a chronic appendix was removed. Twenty-four hours after operation he developed pain across the chest, dyspnea and extrasystoles. An electrocardiographic tracing was made, showing QRS slurred in leads 2 and 3, and frequent premature ventricular contractions. The opinion was, "definite electrocardiographic evidence of myocardial disease." To test the actual effect of thiamin chloride, on January 24, he was placed on a low protein diet; no meat, fish, eggs or milk, and 3 mg. of thiamin chloride was given by mouth three times a day. An electrocardiographic tracing made January 29, 1941, showed QRS slurred in lead 3, and T wave flat in lead 3. There were no premature contractions and lead 4 showed normal variation. The opinion was that there was no evidence of myocardial disease. He was discharged on January 31, 1941, and has had no complications. A cardio-respiratory test run on him February 11, 1941, showed a normal and prompt response with an elevation of systolic blood pressure of 40 mm. of mercury.

COMMENT

These two cases, I am sure, are representative of a large number of such which are probably overlooked, and inasmuch as thiamin is non-toxic, (Weiss has injected as much as 75 mg. intravenously without toxic manifestations) a plea is made to administer the vitamin to all patients in whom a restricted diet is necessary. It cannot be too strongly stressed that no chemical, or combination of chemicals, can take the place of a well balanced diet, meaning thereby, one containing all the vitamins.

Tests for the amount of thiamin in the urine are too complicated for routine clinical purposes, and until a practical test is discovered 300 units of thiamin, corresponding to 1 mg. of thiamin hydrochloride, should be considered the minimum daily requirement.

SUMMARY

1. Our present knowledge of vitamin B_1 is the result of research extending over 50 years.

2. Myocardial dysfunction, the result of vitamin B_1 (thiamin hydrochloride) deficiency is a definite clinical entity and is promptly relieved by the administration of the vitamin.

3. Two cases illustrating this syndrome are reported.

4. A diet containing sufficient vitamin B_1 which is readily obtainable, should lessen the incidence of the syndrome.

5. Proprietary vitamin B_1 should be required only in acute cases.

REFERENCES

1. Eijkman, Christiaan: Virchow's Arch. path. Anat., 148:523, 1897.

2. Funk, Casimir: The etiology of deficiency diseases, J. Physiol., 45:975, 1912.

3. Osborne, T. B., and Mendel, Lafayette: The relation of growth to the chemical constituents of the diet, J. Biol. Chem., 15:311, 1913, and 16:423, 1913.

4. McCollum, E. V., and Davis, Marguerite: The necessity of certain lipins in the diet during growth, J. Biol. Chem., 15:167, 1913, and 19:245, 1914.

5. Addinall, C. R.: The Story of Vitamin B_1, Merck & Co., Inc., Rahway, N. J. 1940, p. 8.

6. Cline, J. K., Williams, R. R., and Finklestein, Jacob: Studies of crystalline vitamin B_1. XVII: Synthesis of vitamin B_1. J. Am. Chem. Soc., 59:1052, 1937.

7. Wellman, C. H., Bass, C. C., and Eustis, Allan: Investigations of Louisiana rice with reference to the etiology of beriberi, New Orleans M. & S. J., 65:191, 1912.

Wellman, C. H., Eustis, A. C., and Scott, L. C.: Rapid cure of polyneuritis gallinarum by intramuscular injections of a substance isolated from rice, Am. J. Trop. Dis. & Prev. Med., 1:295, 1913.

8. Eustis, Allan: The diagnosis and care of the failing heart muscle, New Orleans M. & S. J., 79:50, 1926; The diagnosis of myocardial insufficiency, New Orleans M. & S. J., 51:605, 1929; The response of the cardiovascular system to respiratory strain: a measure of myocardial efficiency, Ann. Int. Med., 5:842, 1932.

9. Scott, L. C., and Herrmann, George R.: Beriberi (maladies des jambes) with especial reference to cardiac manifestations, J. A. M. A., 90:2083, 1928.

10. Alsmeer, W. C., and Wenckebach, K. F.: Herz und Kreislauf bei der Beriberi Krankheit, Wien. Arch. f. inn. Med., 16:193, 1929.

11. Wenckebach, K. F.: Das Beriberi Herz, Julius Springer, Berlin, 1934.

12. Weiss, Soma, and Wilkins, R. W.: The nature of the cardiovascular disturbances in vitamin deficiency, Trans. Assn. Am. Phys., 51:341, 1936; Weiss, Soma, Haynes, F. W., and Zoll, P. M.: Electrocardiographic manifestations and the cardiac effect of drugs in vitamin B deficiences in rats, Am. Heart J., 15:206, 1938; Weiss, Soma: Occidental beriberi with cardiovascular manifestations, J. A. M. A., 115:832, 1940; Weiss, Soma: Vitamin B and cardiac failure, Clin. Med. and Surg., 44:353, 1937.

13. Strauss, M. B.: Therapeutic use of vitamin B_1 in polyneuritis and cardiovascular conditions; clinical indications, J. A. M. A., 110:953, 1938.

14. Langeron, L.: Avitaminose B_1 et insuffisance cardiaque; le cas de la "myocardie alcoholique" assimilable à un "beriberi nostras," Presse méd., 47:1189, 1939.

15. Winans, H. M.: Heart in avitaminosis (B_1), Tri-State M. J., 12:2392, 1939.

16. Jones, W. A., and Sure, B.: The role of vitamin B in cardiovascular diseases: preliminary report, J. Lab. & Clin. Med., 22:991, 1937.

17. Cowgill, G. R.: The Vitamin B Requirement of Man, Yale University Press, New Haven, 1935.

18. Sherman, H. C.: Food and Health, Macmillan Co., New York, 1936.

19. Year Book of Agriculture, No. 1681, U. S. Dept. Agriculture, Washington, pp. 286-295, 1939.

DISCUSSION

Dr. C. J. Tripoli (New Orleans): Dr. Eustis called our attention to one of the most important recent advances in the therapy of heart disease. In the past we believed that by definition a patient must present demonstrable polyneuritis, before a diagnosis of beriberi could be substantiated.

We know now that symptoms of so-called subclinical beriberi may be manifest in the nervous system or cardiovascular system or gastrointestinal tract without the complete picture being present.

Unfortunately, at the present time there is no specific practical laboratory test or positive changes in the electrocardiographic studies which are pathognomonic of beriberi.

Thusly we are confronted with a very important point in the handling of cases of beriberi type of heart disease. The dramatic result obtained by oral or parenteral administration of thiamin chloride in beriberi is incredible unless one actually sees it. But unless the patient has a deficiency, thiamin chloride may not be of value. We may say that a case is one of beriberi, or B_1 deficiency, in the presence of edema, low blood pressure, and an enlarged heart in the absence of hypertension or anemia. However, there are other conditions, not grossly manifest which can and do give the same clinical picture as beriberi and should the case be not properly studied a serious error may result. Two patients have recently come to my attention: One, a white male 48 years of age, presenting the syndrome of low blood pressure, a large heart, dyspnea on exertion, and edema of the ankles. He was given thiamin chloride and told to go about his business. He developed congestive heart failure and died. Autopsy revealed a posterior infarct in his left ventricle. The other patient was a white female 12 years of age presenting a similar syndrome. She was allowed to ride her bicycle after a preliminary course of thiamin chloride and rest. She was readmitted having edema, a large heart and hypotension. Electrocardiographic studies revealed a prolonged PR interval as seen in rheumatic heart disease.

It is probable that thiamin chloride can do no actual harm even in large doses, and that it may be useful as an adjunct to other therapy in almost any type of heart disease.

Dr. J. H. Musser (New Orleans): I had the opportunity of seeing something of the cases reported by Dr. Herrmann and Dr. Scott back in 1928. At that time, in the parish prison, there was a so-called epidemic of beriberi, and there were, I believe, four or five fatal cases. I remember one of these was a big husky buck negro. He had no history of previous disease. He was carried from the parish prison to Charity Hospital and as he was being laid in the ambulance, he made some kind of a sudden move, turned over, and promptly died. Now, of course, this type of case and these cases that Dr. Eustis has recounted are instances of exaggerated beriberi heart. I would like to stress the importance of recognizing the milder cases, cases in which the symptomatology is not positive, not definite, but given a patient who does show, as Dr. Eustis has brought out, breathlessness on slight exertion, who has had to a certain extent some slight edema of the ankles, not particularly marked, who has eaten an inadequate diet and, in addition, has fatigue, these findings suggest, if you find a red tongue, definite evidences of vitamin B deficiency. You will find that by the administration of thiamin the results are spectacular indeed. I think it is the milder cases we should recognize as we know pretty well what the entity is in the exaggerated and severe instances.

Do not be afraid to give too much thiamin. It just so happened that we had a patient in the ward three weeks ago who had a red tongue and a fissure at the corner of the mouth, dyspnea, and tenderness in the calves of the legs, an excellent case for the administration of thiamin. Thiamin was given and the results were beautiful. About five days after he had been started on this, I asked the intern what dose the patient was getting. He said he was getting 50 milligrams three times a day. That is a man sized dose, ten or twenty times what we need to give. This demonstrates that you can give excessive amounts without producing trouble. The only thing about it is that thiamin is costly and to give ten or twenty times the normal dose makes the therapy very expensive indeed.

The results with thiamin, as Dr. Eustis said, are really quite remarkable indeed. Just before I left to come here I had a conversation with a gentleman who is very much interested in rice polishings, and who is with one of the big coffee firms in New Orleans; he wanted to know if it would be practical to add rice polishings to his oatmeal in the morning, or his cream of wheat. He was interested to know whether he could have these rice polishings assayed so that they could be put on the market, as by-products, of milled rice which could actually have value. It would be a cheap way of supplying natural thiamin.

Dr. M. D. Hargrove (Shreveport): Dr. Eustis has discussed a very important phase of heart

disease. I simply want to call attention to one or two points.

In the Shreveport Charity Hospital, we see a great deal of heart disease, but frank beriberi heart we see rarely, particularly in the negro, so that we have not had a great deal of experience with typical beriberi heart. Even at autopsy, we see few patients who cannot be classified on some other etiologic basis. But we have been impressed by the number of chronic cardiacs who because of some gastrointestional disturbance or for purposes of treatment have been on a very reduced diet with a low vitamin intake and as a result, have an associated vitamin B deficiency. With adequate doses of thiamin chloride they have shown definite improvement. I do not mean to imply that vitamin B or thiamin chloride should be given to every patient with chronic heart disease or congestive failure, but if you have a patient who has not responded to the ordinary routine of treatment, it is well worth while to add to the other medication adequate doses of vitamin B.

Dr. Allan Eustis (In closing): I did not mention the importance of absorption of the vitamin, because I expected Dr. Silverman to discuss this point. As important as the composition of the diet is the absorption of it; an individual may be obtaining ample vitamins in the diet, but on account of some disease of the gastrointestinal tract may fail to get the benefit from them through lack of assimilation.

One point that Dr. Musser made, "these milder cases," I think is extremely important, and as I look back on cases of myocardial insufficiency which I have reported in the past, I think now they were mild cases of vitamin B_1 deficiency. I thought that diathermy and rest helped them, but the real reason for their improvement was that I insisted on their receiving a balanced diet including all the vitamins.

In earlier days the farmer took his grain to the miller and had it ground; now, the grain is refined and so contains no vitamins.

In regard to the danger of thiamin, the patient mentioned by Dr. Musser got 4500 units a day. I have a patient now whom I am observing with Dr. Hopkins, and we are giving massive doses of thiamin—160,000 international units a day, without any reaction at all. Weiss has often given as much as 70 mg. corresponding to 21,000 international units without any reactionary symptoms.

TREATMENT OF ARTHRITIS*

ARTHUR A. HEROLD, M. D.
SHREVEPORT

The study of the subject of the arthritides, in its various aspects, is enormous, the amount of literature available being no less than appalling! Someone has said that where so much is offered, there is difficulty in culling out the good, if any worthwhile be present; or, to put it in another way, Dr. Gorton, who has kindly consented to open the discussion on this paper, has (and I think from personal experience and suffering) compared Mark Twain's remarks about the weather to the subject at hand.

At any rate, we cannot, at least, lay claim to discussing something new, for, if we may believe the anthropologists, arthritis is the oldest known disease. They assert that in the museum of the University of Kansas is the skeleton of a large swimming reptile, whose foot is said to show the lesions of chronic rheumatism; the beast is supposed to have lived 600 million years ago. They say that the ape man of the Pliocene period, a mere two million years old, the Java and the Lansing men, our own ancestors of only 500,000 years ago, had chronic rheumatism of the spine and, likewise, the ancient Egyptian mummies and pre-Columbian Indians of America.[1]

As has been stressed by others, there is no disease or group of diseases that present such a high morbidity in proportion to mortality as do the arthritides and, especially, the so-called "rheumatoid arthritis." It has been estimated that fully one and one-half million people in the United States today are incapacitated for work by this malady and Hench and his associates, basing their figures on a house-to-house canvass, in certain areas, estimate that there were, in this country, in 1937, 6,850,000 persons suffering from this condition, or these conditions.[2]

As time will not permit a full discussion of all phases of arthritis, I shall, in this paper, exclude the specific arthritides, such as acute articular rheumatism, gout, and gonorrheal arthritis, limiting this paper to the two types of so-called rheumatoid arthritis.

*Read before the sixty-second annual meeting of the Louisiana State Medical Society, Shreveport, April 23, 1941.

Now, for a brief résumé of the etiology and pathology, as best we see them at this time.

The concensus today seems to be that the direct cause is principally trauma, in the form of direct blows, or "insults" from strains, in those persons who are predisposed, either from cachexia, endocrinopathy or avitaminosis; also with resistance lowered from grief, worry or shock—"the stress and strain of modern civilization." These lesions are aggravated, but not caused, by focal infections, either from an original focus or a secondary one.

As to the pathology, in the atrophic or proliferative type, there is found destruction of articular cartilage, which leads to ankylosis, with granulation tissue on synovial membrane and connective tissue surrounding. In the hypertrophic or degenerative type, there is destruction of articular cartilage and the production of deformity without ankylosis, the articular cartilage being eroded and exposure of both boneends with compensatory hyperplasia or "lipping."

TREATMENT

There are many angles and varying opinions in regard to treatment. As in everything else, the first principle of treatment is to "remove the cause," provided, of course, you can find it. Too often, it is already gone, such as trauma in its various aspects; then, we should naturally attempt to rid the body of predisposing and aggravating factors. The first step in this direction is a thorough physical examination, with all modern laboratory aids, including a basal metabolic reading and we should always be on the lookout for vitamin deficiencies. In order thoroughly to evaluate a case, cultures should be made, not only from the blood, but from all body secretions and excretions and from specimens taken from gums, throat and nose. This is the practice in the famous Burbank Clinic in New York, but Burbank and Hadjopoulos do not stop there; they test the serum of the patient with various cultures of organism involved in the arthritic process, especially the types of streptococcus so often found about the joints, and they prepare a vaccine out of cultures of the germs to which the patient's blood is found to be complementary. If a definite focus of infection is found to be present and, especially, if streptococcus can be shown to be present, it is well to remove this, with the hope that thereby the arthritic lesion will be improved, either directly or indirectly, by improving the patient's general condition. The same principle applies in attacking foci, without removal, as shall be brought out later.

Late removal of infected organs, after the local infection has been pretty well overcome by the bodily resistance and the damage to joints is fixed, does as much good as trying to drown a duck by pouring water on his back. In a thorough discussion of this point, Russell Haden of Cleveland, at the Southern Medical Association meeting in Oklahoma, stated that he has never seen an arthritis patient, who had come to him for aid, who had either teeth or tonsils. To quote from Hench et al: "Treatment of the disease has varied from the local application of rattlesnake or dog oil and salicylic acid, heavy metals and dyes, down to removal of almost every organ in the body that is not padlocked."[2]

A very important point in handling these cases and one which cannot be controverted is that of treating the patient as an individual and thereby cure or minimize constitutional deficiencies, by removing, if possible, blood dyscrasias, combating endocrinopathies, avitaminosis and—let me stress this as essential—treating intestinal autointoxication, a factor too often overlooked, the intestinal tract so frequently harboring virulent types of streptococci. In addition, of course, the patient's general condition otherwise permitting, definitely diseased organs in abdomen or pelvis may be removed, in the hope of "bolstering" the general resistance. Please do not misunderstand me; definitely diseased foci should be removed, but not with promise of thereby curing arthritis.

Now, as to drug therapy; much has been claimed at various times for so-called "specifics" and, in some cases, there has been

some foundation for these respective claims; for instance, we know that there are certain classes of patients who are usually relieved of any pains, for a while, with salicylates in large doses. It is known, as suggested above, that those with chronic malaria will have neuritis alleviated with quinine and other anti-malarial drugs. The sulfonamides are often helpful where cocci are involved and, especially, as aids in preventing the setting up of secondary foci of infection; sulfanilamide, sulfathiazole, sulfapyridine, disulon and various proprietary modifications have done good, in some cases, but that does not give them the rank of true specifics; where there is a luetic background and in some cases where staphylococci can be demonstrated in organs of the body, the arsphenamines will do much to combat the trouble by overcoming these stated infections. The bee sting has been said to be beneficial in arthritis generally, and it was formerly thought that any improvement was due to the counter-irritation, until some Germans put forth the claim that there is virtue in the venom and so bee-venom has gotten a reputation and is considerably used in some localities. However, the greatest claims come from the promoters of gold and sulfur therapy and there are many preparations of these elements on the market today. My own experience with gold therapy has been so limited that I shall confine by remarks concerning that method of treating atrophic or other forms of rheumatoid arthritis to the conclusions of Snyder, who closes an extensive article with the following:

"1. Gold salt therapy at present is probably our most effective weapon for the treatment of rheumatoid, infectious and mixed types of arthritis.

"2. It is admittedly dangerous because it sometimes produces toxic reactions. Improved methods of administration during the last five years both here and abroad, have brought about a rapid reduction in the percentage of toxic reactions. Our percentage has been reduced from 40 to 16 with myochrysine and gold sodium thiosulphate and 8 per cent with auro-sulfide. The great majority of our toxic reactions were mild.

"3. Myochrysine is probably the most efficacious gold salt, but it is also the most toxic. If toxic manifestations occur following the use of myochrysine, auro-sulfide can be safely substituted after the rest period.

"4. Parr and Shipton report that women are eight times more susceptible to toxic reactions from gold salts than men. It might be advisable for this reason to use myochrysine in men and auro-sulfide and parminal in women.

"5. Recently, it has been claimed by Secher that in a series of 150 cases of arthritis treated by him, all toxic reactions were eliminated by the administration of four times the normal requirements of vitamin D, B_1, B_2 and C. The accuracy of these findings should be tested out in the large arthritis clinics in this country.

"6. Auro-sulfide, an American product, appears to be the least toxic of all the gold salts used up to date. Unpublished reports from the West confirm this impression. Much clinical and experimental work remains to be done to determine the exact value of colloidal gold products."[3]

As to sulfur therapy, I feel that I have had sufficient experience in a limited number of cases of the hypertrophic type to state that the improvements which I have seen from the intravenous administration of sulfur diasporol have been much more than can be explained on the grounds of psychotherapy or spontaneous remissions. I shall not lengthen this paper by detailing reports of cases, but, when we see a patient who, for nearly a year, has been so stiff in the thighs and knees that she could not attend to household duties, go back to resume attendance on social functions after treatment with sulfur, we cannot but be convinced that there is virtue in it. In fact, the statement has been made that all the gold preparations are contaminated, more or less, with sulfur, so that in reality, much of the good claimed from these might be due to sulfur.[3]

Among treatments advocated, which have not previously been mentioned, are iodides, chaulmoogra oil, immense doses of vitamin D, histamine, bilirubin, x-ray and radium,

or thyroid extract. Some of these have their places when specially indicated, but to give them indiscriminately because advertised as effective, is little short of criminal.

I have previously referred to the undoubted large role played by "intestinal toxemia," "auto-intoxication"—or call it what you will. A majority of arthritics are chronically constipated and many have irritated their gastrointestinal tracts with harsh laxatives; not only do the end results of intestinal putrefaction do harm, but their presence in an irritated bowel makes the wall more vulnerable, so that the infected material, often laden with strains of streptococci, swallowed from infected oral or nasopharyngeal spaces, finds easy entrance into the portal circulation and often colonies are deposited about articular cartilages and joints. To combat this, Burbank has prepared a special capsule, which I use with success; it contains fatty bile acid (a sodium soap of lecithid), combined with a small amount of belladonna and phenolphthalein, which he and Hadjopoulos claim is destructive to these streptococci.[4] Regardless of this, proper attention to the hygiene of the gastrointestinal tract should always be given to arthritics; high vitamin diets with ample residue should be prescribed and acid-ash substances should be banned.

As to the vitamins, pharmaceutical houses have been making extravagant claims for their respective products, regardless of whether or not patients show evidences of deficiencies. As previously mentioned, definite deficiences should be treated as indicated and it has been found that often vitamin C (ascorbic acid) gives much relief in cases of acute exacerbation. What the *modus operandi* is, I am not attempting to say, but large amounts of citrus fruits with 50 to 100 mgm. tablets three times a day are helpful.

The part played by the endocrines in aggravating, or contributing to suffering of arthritis should be brought out. It is well known, and frequently observed in pregnancy, that due to excess of certain hormones, chronic arthritic pains improve, whereas in the menopause and the catamenia, they get worse. It is certain that those who have a lack of thyroid secretion get some relief from specific therapy. On the other hand, there is such a condition as a "true thyrotoxic chronic arthritis."

Much has been said and written about both specific and non-specific vaccines in the treatment of these diseases. Undoubtedly, some are of value, especially if they act as non-specific proteins in increasing bodily resistance. Virtue has been claimed by some firms for their stock vaccines of streptococci and some doctors were enthusiastic, a few years ago, about a certain mixture of "a little of everything," put out by a certain reputable drug firm under a patented name; they claimed it a specific for "rheumatism," the improvement which was seen from it being clearly due to the non-specific protein reaction. The nearest approach to a specific serum or vaccine, one which I have personally used with good results, is that prepared by Burbank and his associates, to which I have previously referred.

Physiotherapy, in which heat is pre-eminent, is not to be overlooked as a valuable adjunct in the handling of these patients. I know of nothing so relieving in spondylitis as a hot shower bath down the spine, followed by a brisk rub; likewise, hot sitzbaths when the bones of pelvis and hips are involved. This is the great virtue of the spas in this country and abroad. Passive motion, properly applied, where indicated, together in some cases with scientific massage, is of much value, but these should be used only upon advice of competent orthopedists.

This brings us to orthopedic considerations and, when we internists need orthopedic help for an arthritic patient, we usually know—or, at least, think we know—to whom to appeal. I would like to state that I am leaving this phase of the subject to one better fitted to discuss it, but, from personal experience, I must say that there is nothing more welcome in painful arthritis of cervical spine than immobilization with extension.

Psychotherapy plays a large part, no doubt, in properly handling the chronic ar-

thritic. The physician who can keep his patient in a happy frame of mind through the exacerbations, knowing that a remission will follow, is a good psychologist. We certainly have enough vaunted remedies to try out to keep his hopes buoyed up and we should remember the dictum of Barker that "a psychiatrist should know medicine, an internist should always be a psychiatrist also." We should bear this in mind and always take advantage of the remissions to reassure the patients.

Osgood concluded a recent article as follows: "I have no conviction that either the exact etiology or the rational treatment of atrophic or rheumatoid arthritis or of hypertrophic or degenerative joint disease has been found. The findings in experimental animals and a small amount of clinical work merely suggest that more extensive and intensive research should be encouraged."[1] While I cannot agree, *in toto*, with this learned authority, still there is much food for thought in his utterance, which comes after many years of experience and it is to be hoped that those with research facilities will further enlighten us in the near future.

CONCLUSION

I would like to leave this thought with you: There is probably no disease or class of diseases today that requires more individualizing than the subject of this paper; in other words, here is the time when we have to treat the patient rather than the disease.

REFERENCES

1. Osgood, Robert B.: The medical and social approaches to the problem of chronic rheumatism, Am. J. M. Sci., 200:429, 1940.

2. Hench, Philip S.; Bauer, Walter; Dawson, M. Henry; Hall, Francis; Holbrook, W. Paul; Key, J. Albert, and McEwen, Currier: The problem of rheumatism and arthritis, Ann. Int. Med., 13:1655, 1940.

3. Snyder, R. Garfield: The present status of gold salt therapy in Europe and America in the treatment of chronic arthritis, Proc. Am. Soc. for Study of Arthritis, June, 1940.

4. Hadjopoulos, L. G.: Round table discussion of arthritic problems, Ibid.

DISCUSSION

Dr. J. T. Jacobs (Oklahoma City): The treatment of arthritis is basically medical. The orthopedic treatment simply aims at relief of pain and correction of deformity by mechanical or surgical means.

In the atrophic type of arthritis, the patient is usually first seen with multiple joint swellings which are very painful. The slightest motion produces more pain, and he is awakened at all hours of the night. These joints need complete physiologic rest, and simply lying in bed is insufficient. Well molded plaster splints, which immobilize all afflicted joints, should be used; they enable the patient to move with relatively little pain, and are removable for nursing care. Since fibrous ankylosis often occurs, these splints also serve the purpose of maintaining the joint in the position of maximum usefulness. The importance of this splinting cannot be over emphasized. The prevention of these deformities is much easier than their correction. During this acute stage, local heat may give some comfort, and massage can be used between the joints, rather than directly over the inflamed area.

When the acute stage is over, any residual deformity is attacked as an individual problem. Flexion contractures can often be overcome by traction or by wedging plaster casts. Unstable or painful joints can often be improved by arthrodesis. Stiff joints sometimes call for arthroplasty or other measures too numerous to mention.

In the hypertrophic type of arthritis, multiple small traumata predispose to its development. Thus, in knock knee, the lateral condyles of the tibia and femur are subjected to excessive weight thrust, and hypertrophic arthritis often results. In this instance, a heel wedge can often redistribute the weight bearing thrust so as to relieve the uneven strain and prevent or relieve the development of this condition. Many other similar instances in the weight bearing joints are seen; a short leg which will overwork the lumbar spine, or a healed fracture with misalignment, provide the necessary small traumata to develop the arthritic changes. These conditions sometimes require major surgical procedures, but more often, simple shoe correction is sufficient.

In the more general type of hypertrophic arthritis, the orthopedic measures are largely directed at the relief of pain, and each case is a problem in itself. Thus, as Dr. Herold has mentioned, extension with immobilization in the arthritic cervical spine often gives surprising relief which may persist for months or even years after cessation of the treatment.

To discuss the orthopedic treatment of each joint would take excessive time. The orthopedic care of hypertrophic arthritis can be summarized as follows: Measures which give partial or complete rest to the joint; a circular cast for complete rest; braces which allow only a limited range of joint motion will give partial rest; physical therapy in the form of heat and massage, and surgical measures which re-align or even reconstruct the joint can be resorted to.

In general, it may be said that when pain or deformity exists, the orthopedic surgeon has much to offer as an adjunct to the medical treatment.

Dr. J. M. Gorton (Shreveport): In discussing the treatment of any disease we naturally have to

consider the etiology. There is great divergence of opinion as to what is or are the main etiologic factors. Some consider infection; others, circulatory, intestinal, or allergic. To me the whole seems complex and the varied etiologic factors which are claimed to be the cause seem rather to be the factor which disturbs metabolic processes and in turn alters circulation and nutrition to such extent that arthritis results. I believe metabolic changes to be the final factor in arthritis.

I have tried nearly everything recommended by Dr. Herold except the gold therapy and vaccine of Burbank. None of the drugs, vaccines or other preparations have been very satisfactory. Several years ago I used to some extent phylacogens which Dr. Herold referred to and must confess I did get some response but I am certain now that it was the protein reaction and not any merit in the mixture itself.

Professor Cawadias of Athens University states that the cells in arthritis have lost their ability to retain sulphur in same manner as cells in tuberculosis lose their ability to retain calcium and cells in diabetes lose their ability to utilize carbohydrates.

Professor Robert Bish of Germany, in 1921 called attention to the useful role of sulfur in treatment of arthritis.

More recently Dr. S. C. Woldenberg, of the United States Veterans' Facility, has published many reports of the use of colloidal sulfur (diasporol). He reported some time ago 356 cases among veterans treated in Government Hospitals and states that 78 per cent responded favorably.

He calls attention in a recent published article to the important part played by colloids. The important cell elements are proteins and lipoids. These are influenced in their functions largely by the colloids. Sulfur existing in the tissues in a colloidal state is the most important oxidizing agent. It is, however, very loosely associated and has a great affinity to numerous toxins.

It combines readily with histamine which then loses its physiologic properties and is eliminated. It also combines with indol to form indoxyl and is eliminated as indican. This shows that there may be great loss of sulfur as result of toxic substances in the blood which have a great affinity for the sulfur. Various inflammatory diseases may produce these substances and in this way be the indirect cause of arthritis. Sulfur exists in tissues as glutathione. Its products, cystine and cysteine, are the normal available substances furnished by the liver and are necessary constituents of tissue cells.

The cystine test of fingernails has shown that in normal persons the percentage of 12 is usual but that in patients with rheumatism it drops to as low as 6.5 per cent at times. This would add weight to the theory that rheumatics are sufferers of loss of sulfur.

From the foregoing remarks then, we assume that sulfur therapy is rational and that we may find many patients will yield to this type of treatment.

Dr. Joseph S. Shavin (Shreveport): One thing that impressed me particularly was the emphasis placed upon the auto-intoxication or the endocrine factor in the arthritic process. In conjunction with Dr. Browning, we collected from 95 to 100 cases of arthritis, mostly of the atrophic type, only a small percentage of hypertrophic. Of these, between 85 and 90 per cent were relieved or cured. They were treated only on the basis of food sensitization. We felt that a good many of the arthritics had their relapses and flare-ups on the basis of auto-intoxication but we felt that a good deal was brought on by an allergic state. Those individuals showed high indican content in the urine, and, in connection with this, I have seen high indican urine in gastrointestinal allergy I know. It should be a routine test where gastrointestinal symptoms are complained of; where spastic colitis and flatulence are complained of.

A number of the patients would be placed on a diet, limiting their diet to non-allergic foods, purely on the basis of tests. Those people who broke their diets soon realized the arthritis flared up. With the elimination of foods to which they were sensitive, the arthritis subsided. The proof of the pudding is that once they learned their lesson, they stayed away from the things that bothered them. After the arthritis had subsided sufficiently, they could go along to a fairly normal diet, but if they have any symptoms, the allergic foods were eliminated.

What produces the state, I cannot say. It is known that the liver has a great deal to do with the production of the breaking down of any salt and sulfur metabolism, and the use of the gold salts, which roughly contain sulfur, allow the liver to take care of the by-products. I feel that is the way the use of gold has been. That is why, I believe, many of the patients treated with gold have not improved as much as they should have.

Dr. Arthur A. Herold (In closing): I think Dr. Gorton hit the nail on the head when he said regardless of the etiologic factors, it resolves itself into the fact that there is a metabolic error. As to Dr. Shavin's remarks, I never take issue with an allergist, as I do not know a great deal about it, and do not know who does know a great deal about dealing with sensitivity and idiosyncrasy and think allergy is a proper study in itself.

I would like to emphasize that in addition to absorption of indican from the gastrointestinal tract, these cases of chronic constipation have irritation of the tract, which forms a good ground for absorption of organisms, for foci of infection, and therefore, the intestinal tract should be looked after.

There is still room for study and investigation, and I am in hopes that some time we will find a

better specific. And, in the meantime, we had better study the patients and treat the deficiencies and improve their general condition, rather than confine our efforts to a few specifics.

—o—

INDUSTRIAL EYE INJURIES AND THEIR TREATMENT*

ALLEN W. MARTIN, M. D.
BOGALUSA

At the present time, when the wheels of industry are geared to their limit for the purpose of national defense, and inexperienced workmen are employed to carry out the rush of this enterprise, it is to be expected that the eye will share in proportion to other injuries.

Realizing that the greatest obligation the ophthalmologist has to society is the preservation and conservation of vision, I deem the occasion apropos for a dissertation of this type. I hope that what I have to say will be of benefit to the general practitioner, and, in some measure, strike a chord of unanimity of opinion among ophthalmologists. Before delving into the subject of industrial eye injuries and their treatment, I shall endeavor to outline some of the protective measures which we have been able to establish through the cooperation of the larger industries, for whose employees I have had the privilege of caring, during the past ten years.

First: Pre-employment eye examinations of all applicants, consisting of complete examination of all parts of the eye, registering of all defects, and the recording of the percentage of vision. These findings are placed in the records of the superintendent of employment.

Second: Periodic examinations, every year, and re-examinations of all employees who have, by reason of illness or other causes, been absent from work for more than 14 days.

Third: The insistence that all employees report immediately for medical aid for even the most insignificant eye injury, and the protection of all injured eyes, either by bandaging or the use of protective shades, wherever an anesthetic is used in the eye, permitting no employee, who may have a defect of vision greater than 20/40, to work at dangerous occupations.

Fourth: The use of industrial protective measures, such as warning signs, the wearing of goggles in certain occupations, and the guarding of dangerous machinery through the engineering department, all of which have contributed to reducing the hazard of eye injuries to a minimum.

By industrial eye injuries, is meant all changes in the eye and its adnexa, caused by traumatism in industrial pursuits, which may affect the function and appearance of the eye through mechanical, thermal, chemical, and electrical forces, and I shall endeavor to group these injuries under the above named forces.

FOREIGN BODIES

Under mechanical forces, the most frequent injury encountered is foreign bodies. Their location may be under the lids, therefore are quite easily removed by simply everting the lid by grasping the lashes, pulling the lid downward, placing a round probe or applicator over the lid, causing the patient to look down, raising the lid slightly while bearing downward and forward with the instrument. At this time the offending body may be easily brushed away.

Foreign bodies on the cornea may be simple or lead to dangerous complications, and their removal should not be attempted without perfect anesthesia with brilliant illumination and accurate magnification, at times staining with fluorescein solution. For anesthetic purposes, I use a 2 per cent solution of butyn, exclusively. Two drops in the lower cul de sac every minute for three times, will produce perfect anesthesia. Then, with a dull spud or applicator wound with cotton, dipped in sterile boric solution, the foreign body is easily removed. Where foreign bodies, such as steel, fine emery dust, or pieces of iron scale are impacted, I feel that a sharp pointed instrument is far superior for the removal of these offending bodies for the reason that there is less laceration and traumatism of the corneal

*Read before the sixty-second annual meeting of the Louisiana State Medical Society, Shreveport, April 22, 1941.

epithelium when such an instrument is properly manipulated. For rings of rust following the impaction of iron scales, in patients who have delayed in reporting for treatment, or the rings improperly removed, promoting the possibility of infection, the complete extirpation of the ring with cauterization is necessary for relieving the irritation. The use of a 1 per cent solution of atropine drops, and if indication of pneumococci infection, the area should be touched with a 5 per cent solution of optochin, with the administration of sulfapyridine or sulfathiazole, has proved distinctly advantageous in all of these cases.

Penetrating foreign bodies are very serious and the outcome can not be determined. If magnetic in character, the giant magnet should be used in an attempt to extract them through the original opening, provided they are in the chamber of the eye. In this case, care should be taken not to contact the iris, lens, or ciliary bodies. If lodged in the iris, an iridectomy should be performed with especially great care, and the minute body thusly removed. If located in the lens, an opacity usually follows, which may be removed after the eye becomes quiet. If these offending bodies produce a uveitis and a change in the tension of the eye, with loss of light perception, an enucleation becomes necessary to prevent a sympathetic ophthalmia.

CONTUSIONS

Corneal contusions and abrasions are frequent, and if seen early should give but little trouble. After proper cleansing and sterilizing of the eye with bichloride 1-5000 solution, a simple protective bandage usually is all that is necessary. However, I have recently seen two cases of parenchymatous keratitis of the avascular type following a slight contusion of the cornea, showing little disturbance of the epithelial cells. Both failed to respond to the early treatment. In these cases, about one-fifth of the cornea over the injured area showed a bluish-gray discoloration with an accompanying iritis and intense pain and photophobia. A blood Wassermann revealed a positive condition. The consent of the insurer was obtained for the institution of the proper treatment, which cleared these cases promptly.

In contusions which involve the inner structures of the eye, the iris may be separated from its attachment or torn, causing hyphemia, which should subside with rest, cold applications, 1 per cent atropine, and after 36 hours, hot applications to promote absorption. Paralysis of the sphincter, which causes a partial or almost complete dilatation, and is neither affected by atropine nor eserin, may last for considerable time, necessitating the constant wearing of colored lenses.

Contusions of the ciliary bodies may lead to very serious complications and the pain should be combated with atropine and dionin, rest and hot applications. Contusions of the lens may cause a dislocation or rupture of the zonula, producing a cataractous condition, which may be relieved after the eye becomes quiet, by discission or linear extraction. Tear and detachment of the retina are the most disastrous injuries due to contusions, and may result in blindness, depending upon their location. For these conditions the more recent operative procedures with micropin punctures have shown marked success. I must say, however, that in proportion to all the injuries I have seen, these have fortunately been very rare.

LACERATIONS

Lacerations are frequently met in industrial work, and the proper coaptation of the injured parts is of the greatest importance in preventing hideous deformities, particularly in the lids, and especially when these lacerations are in their entirety. The proper method of repair is the separation of the tarsus from the skin and fascia, and the suturing of each separately, with a central suture through both, to prevent a shrinking of the border of the lid.

Corneal lacerations should be treated in accordance with their severity and depth. In minor injuries, proper sterilization with protective bandaging is sufficient. In the deeper types, a conjunctival flap should be dissected, drawn over the injury, and sutured, with 1 per cent atropine, and injections of sterile boiled milk to increase leukocytosis. After about five days, these sutures usually disengage themselves and the

flap can be returned to the normal position and resutured.

Scleral or sclero-corneal lacerations, if penetrating, are of the most dangerous type, as the ciliary bodies are injured with prolapse of the iris, and the danger of interocular infection becomes likely. If the iris is prolapsed into the wound, there should be an attempt at replacement. However, usually the incarcerated portion must be severed, as in an iridectomy, and the sclera sutured. Antitetanus serum should be administered and, if possible, 50 per cent solution of argyrol should be injected into the anterior chamber, with the use of atropine and dionin, and injections of sterile milk, intramuscularly, given daily. If iridocyclitis is followed by uveitis, with the loss of light perception and lowered tension, an enucleation should be performed. However, since the advent of sulfanilamide and its allies, particularly sulfathiazole, I have seen some striking results obtained from its administration.

THERMAL INJURIES

Thermal injuries are those from actual heat. Hot metals, steam, explosions, or flame from furnaces are some of the sources, and fortunately, other portions of the eye itself are protected by the sudden closure of the lids. In some instances, however, this is not the case. Lid burns are treated as other burns of the skin. Butesin picrate ointment is the preferred type of ointment, due to the picric acid it contains, and a sufficient amount of butyn for the relief of pain.

Corneal burns may be simple or very deep, with considerable loss of corneal membrane over extensive areas, and the resulting loss of the eye or large leukoma. In superficial burns a simple protective dressing for 36 hours will usually suffice. In deeper burns, with large areas of the cornea involved, the purpose is to prevent infection if possible, by frequent cleansing, the administration of sulfathiazole, and the use of butesin picrate ointment. For superficial leukoma which follows these injuries, the nightly application of 4 per cent quinine bisulphate ointment is beneficial in removing these blemishes.

In conjunctival burns, the use of butesin picrate ointment and the daily separation of the lids from the globe, with a round applicator, will prevent symblephron. If the burns are sufficiently deep to involve the sclera, they are very much more disastrous, and I have seen a purulent choroiditis due to a flame burn involving the sclera as far as the limbus, resulting in panophthalmitis, demanding enucleation.

Chemical burns may be either acid or alkali. In acid burns, as in all chemical burns, the eradication of the offending substance is more important than an attempt at neutralization. Acid burns may involve the lids, the conjunctiva, the cornea, and even the sclera. In these burns, after thorough irrigation with sterile boric solution, or even tap water, to insure the removal of all acid, the burned areas are treated as other burns.

Alkali burns are, as a rule, those of caustic potash or soda, ammonia, or lime. In these burns, the usual principle of eliminating the offending cause, is maintained. Dilute acetic acid may be used in caustic burns, with the use of butesin picrate ointment as an after dressing. These chemicals may have the same deleterious effect as the flame burn, involving the deeper structures, resulting in corneal destruction and panophthalmitis. One type of combined chemical, used in the digestion of pulp, in paper manufacture, called "black liquor," and composed of lignin, cellulose, and caustic soda, causes a very serious type of burn. This is a combination of heat and chemicals, and the treatment is the same as in other burns.

Lime burns are indeed very disastrous to the cornea and conjunctiva, and all particles of lime should first be thoroughly removed. In these cases, the lime usually contains cement, as in mortar, and every particle should be picked from the cornea and conjunctiva. Freshly prepared neutral ammonium tartrate should be used frequently to irrigate the eye, with the daily separation of the lids from the globe with some type of ointment, such as boric acid ointment, to prevent symblephron.

Ammonia burns are usually received from refrigerator explosions, and the force of the contact adds to the severity of the chemical. I am now treating such a case of a man who works at one of the largest industries. In attempting to adjust a refrigerator, he turned a gadget the wrong way, causing an explosion, and blowing ammonia gases into both eyes. I instituted the thorough irrigation of both eyes for several minutes in order to remove, as much as possible, the gas fumes, then applied butesin picrate ointment, a 1 per cent solution of atropine, and bandaged both eyes. A paracentesis was considered, but as the eyes showed no cloudiness of the media or cornea, this was held in suspension, and the eyes went on to an uneventful recovery.

Electrical burns are usually the result of electrical flashes in short circuiting, and are treated much the same as other burns. Electrical flashes from welding machines, which may be sustained by simply looking at the electric rays without the proper protection, cause great discomfort. This is due to the irritation of the terminal filament of the trigeminal nerve, which supplies the corneal epithelium. The treatment for this injury is the use of protective bandaging of the eye with the absolute exclusion of light for 24 hours.

CONCLUSION

It has not been my purpose to attempt to convey anything new or startling, but simply to epitomize the importance of the seeing of the patients as early as possible, instituting of the proper treatment at first sight, and looking upon the apparently most insignificant eye injury as potentially dangerous, the outcome of which can not be determined.

DISCUSSION

Dr. D. T. Martin (Donaldsonville): I want to mention one thing I have thought of in doing eye work and that is that the general practitioner should know something about the eye. I have mentioned this many times and I think that students should not be graduated from medical school until they are taught when to use atropine and when not to use atropine. I have seen three eyes lost due to the fact that atropine was put in the eye by a general practitioner. If it was known when to use atropine, when not to use it, I think those eyes could have been saved.

Dr. C. A. Weiss (Baton Rouge): Since Dr. Martin's paper was along the lines of preventive as well as curative measures, I want to stress one point brought out. That is the pre-examination of eyes before industrial employment. It is hard for employees to get their employer to have their eyes examined before taking a position. The well organized companies such as large corporations, have realized the importance of this precaution and have all employees examined before they are employed. The transient employing agencies which move in one day and move out again after a few weeks are the worst offenders. You see lots of employees but you have no pre-examination record of the eye; one of the employees gets hurt and you have nothing to go by in the way of the eye condition before employment. I have repeatedly asked the insurance companies why they do not insist on this pre-employment examination. They said labor organizations opposed it too strongly. If we can get sufficient cooperation of the employers with the medical profession to insist on pre-employment examination, I think it will save lots of eyes and save the ophthalmologist many headaches, not to mention the unnecessary lawsuits for compensation.

Along the line of prevention, Dr. Martin mentioned the use of sulfanilamide and sulfathiazole as preventives. In my practice I make up my anesthetic solution with 1-8000 solution oxycyanide mercury. I think in that way the eye is anesthetized and asepticised at the same time. We have gone a long way toward prevention of future infection in that eye.

The other features brought out are also excellent. Another thing we have trouble with often in finishing up treatment of eye injuries or removal of foreign bodies is the application of a pad or bandage to the injured eye. Invariably I tell those patients that they take the responsibility of their eye in their own hands. I do not take the responsibility for the loss of the eye if they refuse a pad, and that usually obtains their consent. I have refused to treat some of those patients who refuse to have their eye covered after an injury. I have seen some terrible results from lack of application of pad or bandage to the eye where considerable epithelium of the cornea has been removed, and the eye left uncovered.

MILDER THYROID DEFICIENCIES*

EARL JONES, M. D.
ALEXANDRIA

In discussing any gland of internal secretion, we start off with a handicap. Like a hunter lost in the forest, we have no trail

*Read before the sixty-second annual meeting of the Louisiana State Medical Society, Shreveport, April 22, 1941.

to follow. The thyroid gland is fascinating because it seems to work so many wonders with the other glands of internal secretion. It is the accelerator for the other endocrine glands. In this discussion, I will take up some of the internist's problems caused by a deficient output. I will limit this paper to the diagnosis and treatment of thyroid deficiencies.

THE HYPOTHYROID CHILD

Thyroid deficiency occurs in all ages, both sexes and in all degrees. It causes a stunting of the physical, mental and sexual activities and of the body growth and development. We are prone to think of the worst degree in childhood as cretinism and in the older individual as myxedema. Cretinism is myxedema and both are severe thyroid deficiencies. From the normal to the worst type we would have to bridge a span of many degrees. In our daily routine, we should become more conscious of hypothyroidism as a producer of many of the annoying conditions we are called upon to treat. Once recognized and treated it is very responsive. With the pediatrician, there is a more urgent appeal because he realizes the destructive effect of hypothyroidism on mental and physical growth and better realizes the importance of early recognition and treatment. Better to aid the pediatricians, the obstetricians have noticed the elevation of the basal rate to a normal of +20 to a +25 during pregnancy and agree that it is wise to consider desiccated thyroid for all of their patients falling under this level. Such a measure is wise and will prevent the birth of so many infants with over-worked thyroid glands and hypothyroid complexes. A hypothyroid child should always put you on guard to the possibility of a hypothyroid mother and of a maternal grandmother with an unsuspected myxedema. It must also be remembered that the younger the child the higher the rate, so again a minus report is of more significance. Against these two peculiarities we find another one that is quite the reverse. In debilitating illnesses there is often a marked degree of hypothyroidism. This would appear more as an effort on nature's part to conserve the bodily resources. With such a view it seems reasonable to conclude that thyroid administration would be harmful.

The child with a deficient thyroid does not always look like a cretin. He may be nervous and hyperkinetic rather than sluggish as expected; he may be thin rather than fat. The texture of his skin, hair and his facial expression may be perfectly normal. Your clue may be some speech defect, a slight deafness or some behavior abnormality. A birth weight of over nine pounds should make you suspect a thyropituitary deficiency, whereas a birth weight of five pounds or less should place you on guard for a possible thyroid deficiency. You would more readily suspect hypothyroidism if you noticed a diminished rate of growth of the hair, nails and bones, or a head of thick coarse hair. Umbilical hernia occurs quite often in hypothyroid children, so does allergy, eczema, colic and a dry skin that cracks easily and gives so much trouble from the fungoid type of invasion. Retarded development in walking, talking or teething should attract your attention to a possible deficiency. The ratio between the upper and lower body segments normally changes because of the more rapid growth of the lower segment. In hypothyroidism this ratio remains that of a younger child. Any slowing of the growth rate should warn you and by studying the child's ratio you may gain a fair knowledge of when the deficiency began. You are likely to find a short nose with a flat bridge, large tonsils and adenoids and a history of many colds. You find delayed dentition and that the teeth formed during thyroid deficiency are structurally weak and decay readily. In early life, cerebral development is delayed and if untreated, permanent damage may result. Cases that occur in late childhood may show no cerebral defect. In older children you may find a normal intelligence quotient even though the child is found to be sluggish mentally. There are children who have a marked deficiency without any characteristic structural changes and its recognition will depend purely on functional

studies. Some degree of mental sluggishness and physical inactivity is likely to be present; however you may have a very temperamental child, one who is inattentive, forgetful, clumsy or just plain undependable. Suspect a thyroid deficiency in any girl who menstruates before she is thirteen. Pale grayish cheeks and lips and circulatory mottling of the skin are evidences of decreased peripheral circulation and are seen often in these deficiencies.

HYPOTHYROIDISM IN ADULTS

In older patients suspect the ones who complain that they are always tired; the allergics; the lady whose hair will not take a permanent; premature graying; increased sugar tolerance; low voltage in the electrocardiographic tracings; spastic constipation and flatulence; gastrointestinal upsets and the ones with a poor appetite. Suspect hypothyroidism in the patients who drift from physician to physician with various diagnoses of arthritis, rheumatism, myositis and the like. They may report having many operations with no relief from their symptoms. Many will be found to have a thyroid deficiency and in these a few grains of desiccated thyroid a day will work wonders. A fair clinical rule would be to suspect a thyroid deficiency in any patient with chronic myalgia, arthralgia, joint stiffness, soreness or backache. The patient who goes from one oculist to another and is never pleased with his glasses should also be tested. He is more than likely a hypothyroid. Then we see a group of patients in whom a thyroid deficiency produces almost a complete reversal of the clinical picture. They are nervous and irritable, undernourished and prone to complain of palpitation and tachycardia. Their skin and hair may be of normal texture. Their only characteristic symptoms are likely to be fatigue and intolerance to cold, yet they will respond to thyroid medication. In the female, menstrual disturbances are common, usually profuse and irregular and it is of interest to note that in unfertile females, 45 per cent are hypothyroids. A mild hypochromic anemia should warn you of the possibility of a thyroid deficiency, as should all fractures with delayed union. Most elderly individuals who are worn out and mentally confused are hypothyroids and respond beautifully to treatment. By way of contrast, we encounter a group of patients with many symptoms simulating thyroid deficiency but in whom thyroid function is normal and therapy useless. They are often overweight with a cool skin, slow pulse and a low blood pressure. Their chief complaints are usually some combination of fatigue, asthenia, vertigo, palpitation, dyspnea and irritability. Their basal rate may be a little low but neither it nor their symptoms will respond to thyroid therapy.

LABORATORY STUDIES

Once suspected, a thyroid deficiency in the younger age group can be checked with x-ray studies of the wrist and ankle. Then, too, a blood cholesterol value of over 200 mg. per hundred centimeters of serum is suggestive of thyroid deficiency provided other conditions that run this value up, as, pregnancy, diabetes, nephrosis and hepatic disease, can be ruled out. Unfortunately these two laboratory procedures do not cross check with each other too well. You may find condemning x-ray evidence in a patient with a blood cholesterol value of as low as 120 mg. A basal test should be run on all possible cases. You can usually get a satisfactory test on a child of eight to nine. In younger children a test on the mother might be of some value in your conclusions. Remember that our basal test measures only the oxygen consumption which is but one part of the thyroid activity. The percentage error is necessarily high since there is a 15 per cent variation in the surface area calculations as made with the tables. Then too such extrinsic factors as diet, race, climate and emotions give us other unstable variations. This is further demonstrated in actual practice. A symptom free individual is seen with a –35 or a hypothyroid with a –5 having annoying symptoms that respond to treatment.

TREATMENT

The most important problem in treatment of thyroid deficiency is its early recognition. The greatest handicap to the proper treatment is a universal fear, among the

lay population, of the use of thyroid medication. It is quite true that symptoms of hyperthyroidism can be quickly induced in a patient by giving excessive doses of thyroid substance, but they quickly subside when the medication is withdrawn. There seems to be no advantage in giving the fancy and expensive preparations. Use plain desiccated thyroid of one standard brand and stay with it, since different brands seem to vary greatly in their potency. Primary hypothyroidism requires a smaller dose than the polyglandular types. A single early morning dose seems to be ideal. Observe your patient frequently until a maintenance dose is established, starting with a small dose and increasing it gradually until symptoms of toxemia are produced, then dropping back one or two grains to arrive at a maintenance dose. Your patient will have to continue on a maintenance dose after the basal has reached the normal level. In adults give sufficient desiccated thyroid to keep them symptom free. In children it is better to raise the rate to a slight degree of hyperthyroidism and avoid retardation in the rate of growth and development. The dose will be found to vary greatly and has to be determined for each individual. Convince the patient that this is not a dangerous drug but a safe animal food and like all necessary foods it has to be continued. Too great an increase in the pulse rate may prevent the use of enough thyroid to help your patient. The addition of iodine makes the thyroid extract better tolerated in these cases. Toxic symptoms are: diarrhea or cramping, vomiting, sweating, irritability and nervousness, excessive or continuous loss of weight, very rapid pulse rate and elevation of body temperature.

CONCLUSIONS

Look for all types of hypothyroidism; do not miss the diagnosis of a curable condition; be particularly careful in your hypothyroid expectant mothers to prevent the birth of another hypothyroid. Do not think of hypothyroidism as cretinism or myxedema or refer to the basal metabolic rate as the significant diagnostic criterion; remember the endocrine factor in migraine, arthritis, allergy, acne vulgaris, hypertension and in growth and sexual disturbances. After all, when you can relieve a deafness, cause a stunted child to grow, clear up an icthyosis, improve an anemia that has not responded properly to usual medication, smooth up a bad disposition, make a sociable agreeable child out of a retiring phlegmatic individual, cause a sluggish fracture to heal, rest up a few tired patients, clear up the mind of a few delirious patients and wind up a few run down doctors and nurses, you have accomplished something worth while.

BIBLIOGRAPHY

Bergmann, V. H.: Physiological actions producing common clinical symptoms of hypothyroidism, J. Missouri M. A., 36:399, 1939.

Golz, H. H.: Hypothyroidism, West Virginia M. J., 36:241, 1940.

Lamp, E. J.: The subthyroid child, California & Western M., 44:371, 1936.

Nelson, C. F. and Nelson, R. C.: The medical management of fractures, J. A. M. A., 116:188, 1941.

Rose, E.: Atypical manifestations of hypothyroidism, Pennsylvania M. J., 42:752, 1939.

Solomon, H. A., Weiss, A., and Hochstein, E.: Clinical classification of hypothyroidism, Endocrinology, 26: 785, 1940.

Wharton, G. K.: Unrecognized hypothyroidism, Canad. M. J., 40:371, 1939.

Wilkins, L.: Thyroid medication during childhood, J. A. M. A., 114:2382, 1940.

Wilkins, L.: Recent studies on diagnosis of hypothyroidism in children, Pennsylvania M. J., 44:429, 1941.

Winkelstein, L. B.: The effect of thyroid on sterility in normal and hypothyroid females, Am. J. Obst. & Gynec., 40:94, 1940.

DISCUSSION

Dr. R. T. Lucas (Shreveport): I think this is entirely too important a subject to allow it to go without discussion, because of its relative frequency. We owe Dr. Jones thanks for merely bringing it to our attention. The thyroid is the one gland that we probably know most about. Hypofunction is the one glandular disturbance in which most is accomplished with therapy, but thyroid extract should be used with caution the same as in the use of any other potent therapeutic procedure.

Dr. Earl Jones (In closing): I am sorry that due to illness Dr. McBride was unable to be present. I was particularly anxious for him to discuss the paper because he is a gynecologist and he wanted to take up the obstetric and gynecologic side of the question, and I think we all missed something by not hearing his interpretation.

CONDYLOMATA ACUMINATA

I. W. KAPLAN, M. D.†
NEW ORLEANS

There is very little in the recent literature concerning condylomata acuminata, although the lesions are still frequently seen in surgical, gynecologic, and obstetric clinics. The condition often complicates pregnancy, causing cesarean section to be performed for fear of puerperal sepsis. The primary purpose of this paper is to report experience with the use of podophyllin, which seems to be a specific for this condition.

ETIOLOGY

The specific cause of condylomata acuminata is not definitely known. The lesions were formerly considered positive proof of syphilis, but it is now known that they may be of either the syphilitic or the acuminate variety and that the two types may even occur in the same patient. The theories of cell inclusion resembling protozoa, of bacterial origin, and of transmission by contact have never been proved. The lesions usually appear in association with chronic irritating discharges, and it seems likely that such discharges, whether acid or alkaline and regardless of their source, may be the cause of the growths.

OCCURRENCE

The most common site of the lesions is between the labial folds, where the vaginal secretion collects and is less likely to be removed by cleansing; they are also found on the perineum, within the vagina, on the cervix, on the prepuce, and may also occur just at the edge of the anus or on the mucous membrane above the sphincter, usually in the first inch of the canal.

PATHOLOGY

Grossly, the growths bear at times a strong resemblance to a raspberry, a cauliflower, or a cockscomb. They are soft to the touch and are of a red, cyanotic hue. They begin as small, discrete, pointed papillae but later become confluent and form growths of considerable size, especially during pregnancy. Usually they are about one to one and a half inches long; some are sessile, attached to the base, others are pedunculated and attached to other growths by the end point. When the papules are located on the mucous membranes they are constantly moist with a mucopurulent discharge; when they are on a cutaneous surface they are usually small, dry, and hard.

On section (Ravogli), "the specimen under low power shows a thick epidermis. The horny layer is thick and is easily detached from the other layers. The cells are not keratinized to form a strong protection. The mucous layer is thick, enlarged, made up of large epidermic cells of the prickle type. They do not show difference between the granular and the basal layer. The epidermis is adjusted on the elongated papillae, separating and covering each division of the papilla without causing any compression. The papillae, greatly enlarged, are divided at their ends into small thin sprigs. They are formed by connective tissue fibers, which are greatly increased in quantity and in size, infiltrated with small cells. Each growing papilla contains blood and lymph vessels. The capillaries which enter in the enlarged papillae have the caliber of cutaneous veins, and in some of the papillae the veins are dilated in the form of varicosities. Between the fibers forming the papillae there are lymph spaces which are filled with fibrin granules. Leukocytes and mast cells are found in the newly formed connective tissues. The proliferating process is remarkable. It can take large proportions, by the dichotomic scission of the end of the papillae through a chronic hyperplastic inflammatory process. The great enlargement of the blood vessels, the congestion, and the effused lymph between the tissues, is the cause of the swelling of the connective tissues and of the increase of the epidermic layers. It seems that the effusion of the lymphocytes between the connective tissue elements produces the proliferation and the increase of the growth. The papillae do not grow in one direction,

†From the Department of Surgery, Louisiana State University School of Medicine, New Orleans, Louisiana.

but extend on all sides in the form of a fan. On account of the enlargement of the veins at the end of the growth, they take the appearance of a mushroom or of a pear. From this irregular process of side growths results the cauliflower appearance of the condylomatous mass."

DIAGNOSIS

The diagnosis is usually not difficult. Condylomata acuminata or genital warts must be differentiated from malignant growths and from those due to syphilis. The lesions due to syphilis are usually flat and broad, whereas those due to gonorrhea or to non-specific causes are pedunculated or sessile. Carcinoma, with which the condylomata may be confused, can be excluded by microscopic examination.

TREATMENT

Numerous methods of treatment have been advocated: Roentgen irradiation, radium irradiation, surgical excision, vulvectomy, ultra-violet irradiation, ointments and escharotics, and removal by cautery. None have been successful and recurrences have been the rule.

The treatment advocated here is simple. It consists of the application of 25 per cent podophyllin in mineral oil to all of the condylomatous masses, care being taken not to make the application too liberal. Within six to eight hours after the application, the patient begins to experience pain over the area of application and usually requires codeine sulfate or even morphine for relief. During the next twelve hours there is a marked local reaction, with inflammation and edema throughout the tissues near the site of application. On the second and third days the condylomata begin to slough off and the pain ceases. On the fourth or fifth day the tissues return to normal. No scarring is visible at the site of the condylomata or surrounding structures. A single application of the 25 per cent solution usually suffices. A weaker solution requires repeated applications and the pain is almost as severe.

In the present series of cases, twenty patients with condylomata acuminata and venereal warts were treated in this manner and all were cured. Twelve were women, eight of whom were pregnant. The smears were negative for gonococci and the Wassermann reactions were also negative. There was one child who had an anal condyloma; in his case also the smears and Wassermann reaction were negative. There were seven males; four had smears which were positive for gonorrhea; none had syphilis.

The following are typical case reports from our series:

CASE NO. 1

Mrs. T. B., white female, aged 21, was admitted to the Obstetrical Clinic at Touro Infirmary when she was seven months' pregnant. Examination revealed one condyloma about one centimeter in diameter on the fourchette at the muco-cutaneous junction and two small condylomata between the labia minora and majora on both sides. Smears were negative for gonorrhea and the Wassermann reaction was also negative.

Twenty-five per cent podophyllin in mineral oil was applied. Eight hours later the patient began to complain of pain, and codeine was given for relief. Twelve hours later there was a marked reaction throughout the tissues of the perineum. On the fourth day the condylomata began to slough off and the pain disappeared. On the tenth day the perineal tissues were completely normal. The patient has had no recurrences.

CASE NO. 2

Mrs. R. M., white female, aged 17, was admitted to the ward when she was eight months' pregnant. Examination showed that the entire vagina was filled with condylomatous masses and that the lesions were also present on the vulva. The insertion of one finger into the vagina caused the patient to scream with pain. One week previously an attempt had been made to remove some of the condylomata with a cautery but they seemed to recur almost immediately after removal. The Wassermann reaction was negative and smears were negative for gonococci.

The vagina was swabbed with 25 per cent podophyllin in mineral oil on a cotton applicator and the lesions on the vulva were similarly treated. Twelve hours later the patient began to complain of pain and was given codeine sulfate for relief. Two days later another application of 25 per cent podophyllin was made. Two days after the second application the condylomata began to slough away. Twelve days later the vaginal mucosa was normal, the condylomata on the labia had also disappeared, and the patient could be examined without pain. One month later she was delivered normally.

CASE NO. 3

J. S., colored male, aged 4, was admitted to the Surgical Clinic at the Touro Infirmary. Examina-

tion revealed a condylomatous mass at the mucocutaneous border of the anus. Smears and Wassermann reaction were negative. The mother gave a history of a similar mass that had been removed surgically three weeks previously.

Twenty-five per cent podophyllin in mineral oil was applied. The patient experienced no pain although there was a slight reaction 24 hours later at the site of application. Seven days later the patient returned to the clinic and examination at that time showed that the condyloma had disappeared and all structures at the site of application were normal.

CASE NO. 4

S. R., white male, aged 16, was admitted to the clinic with venereal warts on the prepuce. Smears and Wassermann reaction were negative. A single application of 25 per cent podophyllin in oil caused all masses to disappear in six days.

SUMMARY

Although the exact etiology of condylomata acuminata remains unknown, an irritating discharge is the most common cause of the lesions.

The most frequent site of occurrence is the labia, the perineum, the vagina, the cervix, the prepuce, the edges of the anus, and, occasionally, the area just above the anal sphincter.

The growths are most common in young adults but may occur in infants.

Twenty cases of condylomata acuminata and venereal warts were treated with 25 per cent podophyllin in mineral oil and all were cured.

The pertinent data on four cases are recounted.

BIBLIOGRAPHY

1. Counsellor, V. S. and Scott, D. E.: Condyloma acuminatum, Surg. Clin. N. America, 11:905, 1931.

2. Creadick, A. N.: Condyloma acuminatum, J. A. M. A., 75:1057, 1920.

3. Goldman, Leon, and Clarke, George E.: Infectious papilloma (so-called condyloma acuminatum) with genital, perineal, and lip lesions in a three-year-old child, Urol. & Cutan. Rev., 44:677, 1940.

4. Hyde, C. E.: Condyloma acuminatum in the anal region in the male, New York M. J., 106:1125, 1917.

5. Jacobsen, Leonard H., and Jones, W. Ray: Venereal warts, a misnomer, and specific treatment, Urol. & Cutan. Rev., 42:28, 1938.

6. Loewenstein, Ludwig W.: Carcinoma-like condylomata acuminata of the penis, M. Clin. N. America, 23:789, 1939. 1939.

7. Phaneuf, L. E.: Condyloma acuminatum complicating pregnancy in a woman having had four previous cervical cesarean sections, Am. J. Surg., 13:468, 1931.

8. Ravogli, A.: Condyloma acuminatum of anal region in male, J. A. M. A., 67:109, 1916.

9. Sequin, P., and Guerin, M.: Spirochetes in condylomas of genital organs, Compt. rend. soc. de biol., 95:69, 1926. Abstr. J. A. M. A., 87:1338, 1926.

10. Wilson, J. F.: Genital warts, J. Royal Army Med. Corps, 68:227, 1937, and 68:305, 1937.

THE USE OF ENTERIC-COATED PILLS IN ALLERGIC STATES*

A PRELIMINARY REPORT OF 82 CASES

NARCISSE F. THIBERGE, M. D.†
NEW ORLEANS

Although attempts to obtain specific desensitization in allergic states by oral therapy have for the most part been unsuccessful up to this time, reports indicate that the method is worthy of further study and trial. The possible advantages of this route are obvious: If it were successful, the patient would be spared the discomfort of injections and the inconvenience of frequent visits to his physician. He could continue therapy when visits to the physician were impossible. Finally, the antigen, if kept in a dry state, would remain active for long periods of time.

The chief difficulty in obtaining efficient hyposensitization by this method seems to lie in the fact that digestion alters the antigenic properties of products administered by the oral route, so that only a small and variable amount of unaltered antigen is absorbed. Touart[1] overcame this difficulty and prevented gastric digestion by administering pollen extracts in salol-coated pills, with satisfactory results. Although the salol coating does not prevent intestinal digestion of the pollen, recent experimental work[2] has furnished an explanation for his favorable results by the demonstration that gastric digestion has a much greater effect upon the antigenic power of ragweed pollen than is brought about by digestion by artificial pancreatic juice.

On the basis of these demonstrations, ragweed pollen, in enteric-coated pills, was administered to a group of patients, 82 in all, who were definitely allergic to ragweed and who had had hay fever or asthma or both during the pollinating season of the

---

*Presented at the Texas meeting of the Southwestern Allergy Forum, May, 1941.

†From the Department of Medicine of the School of Medicine of Louisiana State University, and the Allergy Clinic of Charity Hospital of Louisiana at New Orleans.

plant in previous years. The therapy was begun six weeks before the pollinating season and was continued beyond its duration. The dosage, which was adjusted to fit the exigencies of the individual case, varied from ½ to 6 grains per day. The average dosage in successful cases was ¼ grain (15 mg.) three times a day until the disappearance of symptoms, and the same dose was given once a day thereafter during the remainder of the season. The dose was decreased if symptoms were produced or were aggravated by the medication, and was increased if relief was not obtained promptly.

That significant absorption of unaltered pollen occurred was evidenced by the appearance of allergic manifestations in a number of patients shortly after they had taken the pills. The therapeutic results indicate that successful desensitization can be accomplished by the oral route in a considerable proportion of cases.

Of the 82 patients treated, 13 remained free of all allergic manifestations during the ragweed season, 37 reported improvement noted, and in three instances the symptoms were more severe than in preceding years. The other patients were not followed up. Early in the course of treatment some of the patients suffered mild abdominal pain and a few had diarrhea, but these symptoms were readily controlled by regulation of the dosage.

Thirty patients failed to report regularly to the office or the clinic. Of the 52 who reported regularly, 24 had asthma, 23 hay fever, and five skin allergy. Some patients had both hay fever and occasional attacks of asthma. Of the 24 patients with asthma, six said that they had passed through the season with no severe spells and with greater comfort than they had ever experienced before, 15 were improved, in four no change was observed, and in three the symptoms were aggravated. Of the 23 patients with hay fever, seven said that they had passed through the season with no severe spells and with greater comfort than they had ever experienced before, 10 were improved, in five no change was observed, and in one case the symptoms were aggravated.

The good results possible by this method, as well as other considerations connected with it, are proved more by individual cases than by tabulated data. The following case reports are therefore attached to this brief communication:

CASE NO. 1

A white female, 63 years of age, had had hay fever for 24 years. For the last three years asthma had been associated with it. Injections had been given at regular intervals and had been partially successful. Oral therapy was begun July 1, 1939, and continued during August and September. The pills had a laxative effect and occasionally produced local discomfort in the early days of treatment. The patient had two head colds in 1939, but did not have a single attack of hay fever during the entire pollinating season. She was practically without symptoms in the fall of 1940, and she has requested that she be given another preseasonal course of treatment this year.

CASE NO. 2

A white dentist, 60 years of age, had had typical fall hay fever for 13 years. He never reported for injections except at the height of the ragweed season, but with the passage of time the condition had gradually subsided. His first attack of asthma occurred August 28, 1940, and was relieved in three days by the use of enteric-coated pills. September 12 he had a brief spell of asthma, and September 25 a slight attack of hay fever. Each attack, although acute and occurring in an extremely sensitive patient, was promptly controlled by the use of enteric-coated pills. The initial dose was ½ grain daily, and each time that it was increased the patient felt uncomfortable for about an hour, the period of discomfort occurring about an hour after the administration of the pills, and thus coinciding with the estimated time of absorption. The patient was in good health in April, 1941, and has arranged to resume oral therapy July 1.

CASE NO. 3

A white male, 35 years of age, did not know that he suffered from allergy until he had an attack of asthma in 1938. His severe skin reaction to the ragweeed test and his previous history of "running colds," suggested that the condition was actually of longer duration. As he had never had any medication of any kind, he was an excellent subject for a full course of oral therapy. At the end of 1939, he commented that he had been "remarkably improved" during the whole pollinating season. He had no recurrence of asthma in 1940 or to date in 1941, and is at present on a daily dosage of ¼ grain.

CASE NO. 4

A white female, 32 years of age, had been extremely allergic to ragweed for some years. Although somnolence and gastric irritation occurred shortly after she was put on oral therapy, she was soon able to take doses of ¼ grain once or twice a day without discomfort. September, 1939 passed without incident, although September was usually her worst month, and the improvement persisted throughout 1940. She has arranged to resume oral therapy in July of this year.

CASE NO. 5

A white physician, 58 years of age, had suffered from mild hay fever all his life. In August, 1939, he had an attack of asthma. At this time he refused to continue parenteral therapy, and was given enteric-coated ragweed pills (1/12 grain daily). When the dosage was increased to ¾ grain daily, he developed migraine, and had an increased postnasal discharge, although his asthma had been relieved by the second day of treatment and coughing and wheezing had completely disappeared. On a maintenance dose (1/12 grain three times a day) he has had no recurrence of the asthma and his only complaint, in April, 1941, was an occasional slight nasal discharge. He has arranged for a pre-seasonal course of treatment this year.

CASE NO. 6

A white physician, 32 years of age, who could not tolerate subcutaneous doses of ragweed because of mild anaphylaxis, was tested with enteric-coated pills (¼ grain). Each dose was followed by local, focal and general disturbances, and he discontinued treatment after the second day.

CASE NO. 7

A white female, 23 years of age, had had ragweed allergic asthma for three years, and had received parenteral therapy in 1938. Oral therapy was begun July 1, 1939. At first she could not tolerate doses of ¼ grain twice a day, but later daily doses of ½ grain relieved her. In 1940 she could not tolerate the pills at all and refused to continue treatment.

CASE NO. 8

A white female, 56 years of age, had been treated for ragweed allergic asthma by injections since 1920, with variable relief. Oral therapy was begun in 1939, but produced no relief, and the patient actually suffered more than in any preceding year. When last seen, she had just recovered from a severe attack of pneumonia, which had apparently left her in better health than she had been before.

CASE NO. 9

A colored female, 38 years of age, had asthma for the first time in 1935, and urticaria in 1936. When she was first tested, in 1939, a hypodermic dose of 200 protein units produced a severe reaction, with rash, asthma, and pharyngeal edema. An oral dose of 1/12 grain produced restlessness, headache and dizziness. When the dose was increased to ¼ grain three times a day, all discomfort disappeared. In 1939 the patient was more comfortable than at any time since her illness had begun, and in 1940 she also reported marked relief. As she was then transferred to another service, medication was discontinued, but when she was observed in 1941 it was found that improvement had persisted.

CASE NO. 10

A white female, 48 years of age, had had typical ragweed asthma since the age of 15 years. Parenteral therapy had been given with variable success. Small doses of enteric-coated pills made her nervous and caused migraine, and five hours after an oral dose of ¼ grain she had a severe attack of asthma. When once she was adjusted to a daily dose of ¼ grain, however, she was free from asthma throughout 1939, and a dose of ½ grain daily has kept her practically free from both hay fever and asthma since that time.

CASE NO. 11

A white nun, 54 years of age, had had typical ragweed hay fever for 12 years. For four years it had been associated with asthma and with intermittent attacks of urticaria. Subcutaneous therapy was effective only when vaccine therapy was added. A full course of enteric-coated pills was begun July 1, 1939. An hour after the first doses were taken, a laxative effect was noted, the nose became dry, and sneezing occurred, followed by a discharge. A transient symmetrical erythema and conjunctivitis were also noted occasionally. As this patient is extremely allergic to ragweed, it was possible to check the rapidity of absorption of the antigen from the intestines by the blood stream, especially as house dust or other vaccines were withheld, so that the full effect of oral medication could be observed. Symptomatically, the patient has had 75 per cent relief by this method. In 1940 her attacks were milder, and she was not incapacitated, as she had been in preceding years. In March, 1941, she reported that her winter colds had been milder than they had been in preceding years, and that she considered herself in good health.

CASE NO. 12

A white physician, 64 years of age, who had formerly been in the army and was now a florist, had suffered from hay fever long before the exposure incident to his present occupation. In 1939 he had been partially relieved by a full course of uncoated ragweed pills. In 1940 he was given enteric-coated pills and suffered only two days, as compared with 12 days the preceding year. Previously, a subcutaneous injection of 8,000 pollen units had produced dramatic general symptoms. Oral doses of 1 grain each twice daily elicited focal symptoms of brief duration within an hour and a half or two hours, but later were borne comfortably. When the patient was seen in March,

1941, he was well, and was enthusiastic over the results of oral treatment with enteric-coated pills.

CASE NO. 13

A white female, 32 years of age, had had severe ragweed asthma for a number of years; she was first treated in 1935. In July, 1939, she was given ragweed pills in doses of ½ grain three times a day. A dose of ¼ grain produced an acute attack of asthma, accompanied by conjunctivitis, of brief duration. For some time she has taken a maintenance dose of ¼ grain daily before and during the pollinating season. In 1939 she had one spell of asthma during the whole summer, and in September, 1940, she had hay fever for a single day. In March, 1941, she reported that for the first time since her illness began she had been free of asthma during the whole winter.

CASE NO. 14

A white female, 54 years of age, had had asthma for 21 years and had always been very allergic to ragweed. She had been observed since 1926. A single intrabronchial application of lipiodol (20 c. c. of 40 per cent solution) produced gratifying results. A full pre-seasonal course of enteric-coated ragweed pills, ¼ grain daily, was at first divided into three daily doses. Tachycardia, nervousness, flatulence, and finally a typical attack of asthma followed one or two hours after the first doses. Later a maintenance dose of ½ grain three times daily was well tolerated. The patient was perfectly well in 1940 except for a brief two-hour spell of asthma in October, when the weather changed suddenly. She gained 15 pounds during the pollinating season. In March, 1941, she reported continued improvement.

Because of the length of time this patient has been observed there is no question of the superiority of the oral method over other types of therapy in her case.

CASE NO. 15

A white male, 45 years of age, a traveling radio expert, had suffered from severe hay fever for 30 years. It appeared every fall and was followed by sinus infection every winter. For the past 11 years parenteral therapy had been fairly successful.

As exact and intelligent cooperation could be expected from this patient, he was placed on oral ragweed therapy (¼ grain daily) July 1, 1940. An hour and a half after the ingestion of the pills, sneezing and headache frequently appeared, and sometimes a typical spell of hay fever developed.

August 15, 1940, the patient had a mild attack of hay fever, followed by 10 days of complete relief. Then he spent some time in Arkansas, where he never has hay fever. On his return to New Orleans, during the height of the pollinating season, he had hay fever for two days. In the patient's own opinion he has been very much relieved by this method of treatment. When he was seen in 1941 he was in excellent health; he has arranged for a pre-seasonal course of enteric-coated pills because he is convinced of the efficacy of this type of medication.

SUMMARY

1. Although the advantages of oral therapy in allergic states are obvious, attempts to obtain specific desensitization by this method have not been successful up to this time.

2. The chief difficulty in obtaining efficient hyposensitization by this method is apparently the alteration by digestion of the antigenic properties of products thus administered, so that only a small and variable amount of unaltered antigen is absorbed.

3. This difficulty has apparently been overcome by the use of enteric-coated pills.

4. Eighty-two patients definitely allergic to ragweed were treated by this method, with very promising results. The appearance of allergic manifestations in a number of the patients shortly after the pills were taken indicated that significant absorption of unaltered pollen had occurred.

5. Specimen case histories are cited, showing failures as well as moderately good and excellent results achieved by this method.

REFERENCES

1. Touart, M. C.: Hay fever: Desensitization by ingestion of pollen protein, New York M. J., 116:199, 1922.

2. Thiberge, N. F.: Effect of gastric digestion on the allergic power of digestion, New Orleans M. & S. J., 92:430, 1940.

NEW ORLEANS
Medical and Surgical Journal

Established 1844

Published by the Louisiana State Medical Society under the jurisdiction of the following named Journal Committee:

King Rand, M. D., Ex officio
For one year: James K. Howles, M. D.
For two years: Leon J. Menville, M. D., Chairman.
William H. Perkins, M. D.*
For three years: Lucien A. LeDoux, M. D., Vice-chairman
H. W. Kostmayer, M. D.
Secretary

EDITORIAL STAFF

John H. Musser, M. D.....*Editor-in-Chief*
Willard R. Wirth, M. D.....*Editor*
Edwin L. Zander, M. D.....*Associate Editor*

COLLABORATORS—COUNCILORS

H. E. Bernadas, M. D.
Daniel N. Silverman, M. D.
C. C. deGravelles, M. D.
M. D. Hargrove, M. D.
W. A. Rodgers, M. D.
Rhett McMahon, M. D.
C. A. Martin, M. D.
W. F. Couvillion, M. D.

Paul T. Talbot, M. D.....*General Manager*
1430 Tulane Avenue

*Resigned August, 1941.

SUBSCRIPTION TERMS: $3.00 per year in advance, postage paid, for the United States; $3.50 per year for all foreign countries belonging to the Postal Union.

News material for publication should be received not later than the eighteenth of the month preceding publication. Orders for reprints must be sent in duplicate when returning galley proof.

Manuscripts should be addressed to the Editor, 1430 Tulane Avenue, New Orleans, La.

THE JOURNAL *does not hold itself responsible for statements made by any contributor.*

THE PHYSICIAN IN WAR

A MESSAGE FROM PRESIDENT RAND

The prophetic utterance of the President that this generation had a rendezvous with destiny has proved too true. The crisis is here and our people are fighting for those ideals on which this nation was founded. In the travail of war and in the stress of peace the American physician has always willingly met the issue. This war shall prove no exception, even when we consider that today the battlefield is only a small part of the general scheme of strategy; the doctors are in demand not only in the zone of combat and in the training camps, but in many other fields of endeavor. Today the physician must not only care for his regular practice, but find time to examine the millions who are to make up the nation's fighting forces. The teaching of the healing art to others must continue if we are to supply the thousands of physicians which the nation will need. Public Health can not slow up or curtail its activities, but on the contrary must assume additional burdens. The set-up of civilian defense in thousands of cities, formerly immune from attack before modern warfare disregarded civilized rules and introduced the bombing plane, demands the gratis services of many more physicians. The services of all physicians are needed; do not wait until such services are demanded, but willingly join up in whatever work your qualifications fit you.

There are thousands of medical men serving in the Army, the Navy and the Marine Corps; thousands of others in the U. S. Public Health Service, the Veterans Bureau and other essential war services. The innumerable Selective Service Boards of the nation are served willingly by untold numbers of physicians. Have you done your part? Our fighting forces may equal in numbers some of the gigantic armies of Europe; it is estimated that this may demand more physicians than we see in the offing. The law requires the registration of all males from eighteen to forty-four years of age subject to military duty, bringing millions to arms, and in this age group are many physicians. Consider the question seriously. The burden of the American doctor is heavy; let there be none who selfishly considers only his own weal and disregards his nation's call; he is unworthy of the name of physician. There is work for all.

THE DEFENSE STATUS

At the present time the doctors of the state are being asked to accept assignments in which they will be responsible for the medical aspects of civilian defense in their

communities. Every town with a population greater than 2500 will have, or already has had, appointed one of the local physicians who will be in charge of civilian defense arrangements. All physicians who enroll in civilian defense will come under the leadership of Dr. Rhett McMahon, of Baton Rouge, who is chairman of the appropriate committee.

The civilian doctors will be asked to organize in their community first aid classes, to give instructions in what to do in the event of bombing, how best to prevent contamination of the water supply, to encourage general typhoid immunization, to arrange for sanitary measures in the event of disruption of the sewerage system, how best to care for the injured, what to do in the event of the distributing of the civilian population, notably children, in areas which are not likely to be bombed, and to make arrangements for a host of other possible contingencies which should be taken care of and well organized before the possible bombing of an area. Of course it is obvious that in the event of enemy airplanes reaching Louisiana, the most likely points of bombing would be the large industrial centers and the areas where troops are concentrated. Monroe, Shreveport, and Minden in north Louisiana, Alexandria and the surrounding area in central Louisiana and in the southern part of the state Lake Charles, Baton Rouge with its enormous oil refineries, and New Orleans, would be the most likely places to be attacked. But in spite of the relative immunity of the smaller communities to bombing, nevertheless they may have to receive those who have been injured as result of air attack, it may be that the children will be evacuated to the smaller communities from bombed areas and plans should be made to take care of these problems.

The physicians who will be in charge of civilian defense in larger towns and cities will have a big job. It will require a great deal of time, expenditure of money, where it is to come from is a question, and careful organization. In the City of New Orleans, Dr. Val Fuchs who is Chief, Emergency Medical Service, and his Medical Advisory Council of the Orleans Parish Medical Society have been working for some weeks diligently and industriously so that their arrangements are virtually consummated, although there is still much to be done.

Turning to another aspect of defense, the need for young medical men for the organized services of the Government is still an acute problem. The forms that were published in the New Orleans Medical and Surgical Journal and the Journal of the American Medical Association, have caused a certain amount of confusion. These forms were intended, it is now discovered, only for those who are willing to volunteer for immediate service. In a short time the Procurement and Assignment Service will send out to all physicians a new questionnaire and will prepare a list of military, governmental and other agencies requiring the services of physicians.

PURE MILK

One of the big advances which has developed in the course of the last quarter of a century in the field of public health has been the improvement in the quality of milk that is served to the customer. Needless to state, it is obvious why this was one of the early measures taken to control disease. Milk, after all, is a food which is used by all the population to a greater or lesser extent, but to infants and small children it makes up a good part of their daily ration. Impure milk necessarily is followed by enteric diseases and disorders, by malnutrition and by continued ill health if specific illnesses do not develop.

It was not so many years ago that raw milk was served in open cans and distributed in pitchers and tins handed by the housewife to the milkman. Contamination, of course, was extremely common and this defilement might occur anywhere along the line, from the udder of the cow through the various steps the milk went, ultimately to reach the consumer.

Nowadays milk inspectors keep watch over the cleanliness of dairies; they watch

to see that there is proper sanitary distribution of milk. In so far as control over the milk is concerned, for the most part it is excellent, but there are bound to be slips somewhere, sometimes, in getting the milk to the one who uses it for food and drink. A small dairy with one, two or three cows cannot be kept constantly under surveillance; bottles may not be clean at the point of distribution and there are many ways in which contamination might occur.

Just at the present time the most important problem, however, has not to do with the intestinal disorders that develop as result of the drinking of milk with a high bacterial count, but has more to do with the transmission of specific diseases from the cow to the human being by way of milk. Undulant fever has become one of the real problems of preventive medicine. The disease is not one that necessarily is lethal by any means. As a matter of fact, the mortality rate is relatively low but the long continued invalidism, extending sometimes for a year or two, is a real economic problem. At the present time in the State of Louisiana, veterinarians of the State Livestock Commission and of the Agricultural Department of the United States Government are waging an extensive campaign against tuberculosis and undulant fever in cows. This is a long, hard job and may be fruitful only for a time unless a constant watch is kept over the herds.

In view of the innumerable difficulties of obtaining an absolutely pure milk supply which would require an expenditure that would gross enormous in the state's expenditures of money, almost prohibitive, it would be the part of wisdom to compel producers of milk to pasteurize the milk and to prohibit the sale of all milk that is not pasteurized. Pasteurization of milk is relatively inexpensive, it can be carried out by any farmer who has a large herd or by a group of farmers who have only a few cows apiece, and would ensure for the drinkers a safe supply of milk.

If members of the Legislature knew by personal observation of their own friends and families of the seriousness of undulant fever, they would take steps to provide for universal pasteurization of milk, unless the milk was certified, which milk is extremely expensive and most costly.

———o———

HEPATORENAL SYNDROME

Reich[1] has presented a review of the recent advances in the hepatorenal syndrome which deserves comment because, as he writes, this is one of the most recent and fascinating of clinical entities. Boyce,[2] of New Orleans, has been particularly interested in this subject and has presented it often to the medical profession locally and has published in the Journal results of his studies of the condition.

Although this syndrome has been hazily recognized for nearly eighty years, it remained for Gordon Heyd[3] to clarify in 1924 this syndrome which antedates a few hours or a few days the death of patients who die after biliary tract operations. This author described the name of the syndrome as "liver death." Others have spoken of it as "liver shock," "renohepatic syndrome," "hepatonephritis" and "kidney-liver syndrome." Heyd and Boyce both found approximately the same mortality figures, namely 1.4 per cent of the total number of patients operated upon but accounting for 20 per cent of all deaths.

Heyd described his patients as falling into three different groups. Since that time there have been additional and revised classifications but Heyd's original one seems to be as satisfactory as any. His cases were: (1) Liver death with marked hyperpyrexia and coma; rapidly developing coma preceded by stupor and followed by death in 18-36 hours; (2) liver deaths associated with constantly diminishing jaundice and a slowly developing stupor and coma, a clinical picture which resembles the "cholemic" death of cirrhosis of the liver; (3) liver death in the presence of some unrelated kidney disease, with anuria, the development of a syndrome resembling shock within 48 hours, ultimate failure of water elimination and marked increase in the blood of nitrogen waste products. In this instance renal function and water balance plus chem-

ical changes are the outstanding manifestations.

Boyce, in explaining the mechanism of the condition, states that biliary tract disease is always associated with some degree of liver damage, not sufficiently pronounced to impede in any way ordinary functions of the organ. When an operation is undertaken, additional strain is thrown on the liver with which it is unable to cope. The strain, or factors, include such things as the anesthetic, surgical manipulation and changes in the interhepatic and biliary pressure. The detoxifying action of the liver disappears as result of failure in function of the organ and necrotic changes take place in the liver cells. Subsequently the kidneys, which then have to assume the detoxifying mechanism of the body, are unable to take up the additional load. The function of the kidney is lost. It is unable to handle even normal metabolic waste products, let alone the additional toxins that are liberated by the liver cells which are primarily injured by the hypothetical toxic substances. Boyce believes this whole process is a single pathologic one, with the hepatic changes preceding the nephritic.

To prevent the syndrome, various factors should enter into the study and care of the patient, notably liver function tests and kidney function tests before operation, nitrous oxide or local anesthetic to be used at the operation. Normal water balance and blood chlorides should be maintained. The liver function should be protected by glucose intravenously, calcium chloride and blood transfusions. The operation should be done rapidly.

If the possibility of such a catastrophe as sudden death after an operation on the liver and bile passages is always borne in mind by the surgeon and if preventive measures are taken, it should result in a marked reduction of the mortality following this type of operation.

1. Reich, N. E.: A review of recent advances in the hepatorenal syndrome, Internat. Clinics, 4:135, 1941.
2. Boyce, F. F., and McFetridge, E. M.: Liver deaths in surgery, New Orleans M. & S. J., 88:563, 1936.
3. Heyd, Gordon: Liver and its relation to chronic abdominal infection, Ann. Surg., 79:55, 1924.

HOSPITAL STAFF TRANSACTIONS AND CLINICAL MEETINGS

SOUTHERN BAPTIST HOSPITAL

New Orleans

The regular monthly meeting of the Clinical Staff of Southern Baptist Hospital was held Tuesday, January 27, at 8:00 p. m. Election of officers for the coming year was held.

The scientific program consisted of the following: "Kodachrome Photography in Plastic Surgery" by Dr. Waldemar Metz; "Case Report of Regional Enteritis" by Dr. F. E. Lamothe; death report.

CHARITY HOSPITAL

New Orleans

At a meeting of the Charity Hospital Staff, held on December 16, 1941, the following case reports were presented:

SITUS TRANSVERSUS

Dr. Edgar Hull presented a patient with mirror picture dextrocardia and situs transversus, who also had osteitis deformans. The electrocardiogram, besides showing the typical inversion of all complexes in lead one, revealed predominance of the functional left ventricle. X-rays showed characteristic bone changes of Paget's disease. The serum calcium and phosphorus were normal, the serum phosphatase elevated to 13.5 Bodansky units.

MIKULICZ'S SYNDROME

Dr. John S. La Due represented the case of a 62 year old colored laborer, who stated that he had noticed painless swelling in his neck, axillae, groin and upper eyelids for four months. During the same period, he experienced dryness of the mouth and tongue and undue thirst and found that he could not close his eyes completely or move his facial muscles. These symptoms were associated with weakness and a 20 pound weight loss.

On examination, symmetrical, non-tender enlargement of the lacrimal, salivary, axillary and inguinal glands was found and bilateral, peripheral facial nerve palsies were apparent. A teleoroentgenogram showed enlargement of the superior mediastinum with infiltration of the right midlung. Blood studies were compatible with subacute lymphatic leukemia.

Clinically, this is termed Mikulicz's syndrome and is characterized by symmetrical, painless enlargement of the lacrimal and salivary glands, soreness and dryness of the mouth and facial palsy in about half the cases. It may be a benign primary disease, but more frequently is secondary to leukemia,

lymphoblastoma, tuberculosis, or sarcoidosis.

The diagnosis of the lymph node biopsy in this patient was malignant lymphoblastoma. He has not responded to a full course of deep x-ray therapy.

BUERGER'S DISEASE IN A NEGRESS

Dr. George R. Meneely presented J. E., a 34 year old colored woman, who came to Charity Hospital on November 11, 1941, complaining chiefly of epigastric pain. She had been in Charity Hospital before, in October 1940, at which time she had been having intermittent claudication of the left lower leg for three years, and numbness and pain in the same region for three months. In 1937 the left great toe had been amputated for gangrene at Mobile Hospital.

Other complaints at that time were epigastric pain, vomiting of small amounts of blood, and tarry stools. She also had twinges of precordial pain, and noted nocturia two or three times nightly. Family history was irrelevant.

Physical examination at that time was only unusual in that she had slight epigastric tenderness, and the left lower leg was dark and discolored, slightly atrophied, and without arterial pulsations in the foot.

Routine laboratory studies at that time were essentially negative. The electrocardiogram showed only slight lowering of T_2 and was thought to indicate no evidence of myocardial disease.

The clinical impression was thrombo-angiitis obliterans, but sympathetic block was tried, yet still gangrene of toes supravened. Mid-thigh amputation was performed and she had an uneventful postoperative course. The epigastric distress had subsided and the impression was pylorospasm.

Examination of the amputated leg by the pathologist showed typical changes of thrombo-angiitis obliterans: The arteries, veins, and nerves were bound together with fibrous tissue, and in the walls of the vessels there was a marked increase of fibroblasts with laying down of collagen. The lumen of the vessels was nearly occluded by organized and canalized thrombus. It was the impression of the pathologist that the picture was pathognomonic.

The present admission was for recurrence of epigastric distress, hematemesis, melena, and moderate weight loss. She also complained of slight blurring of vision, and of dyspnea with exertion for some months.

Examination showed only epigastric tenderness. She was studied by x-ray after barium by mouth, and an ulcer crater in the cap of the duodenum was seen. Other laboratory studies were negative, except for an anemia of 3,800,000 red cells with 70 per cent hemoglobin, stool positive for occult blood, and inverted T_2 and T_4 in the electrocardiogram.

She was presented for two reasons: First, Buerger's disease is very rare in colored women, there having been only four such cases among 97 cases discharged from Charity Hospital with this diagnosis in the past four and one-half years, a period of time when 267,882 patients were admitted. Second, she probably illustrates the fact that Buerger's disease involves arteries and veins other than the peripheral ones in many cases. The literature shows many reports of involvement of abdominal and thoracic organs due to involvement of the corresponding vessels in the changes characteristic of thrombo-angiitis obliterans. The peptic ulcer and the evidence of ischemia in the ventricle are ascribed to this process in her case.

J. T. NIX CLINIC
New Orleans

At a staff meeting in December, 1941, Dr. James T. Nix, Jr., presented the following paper:

FURTHER STUDIES ON THE USE OF COLLODION IN THE PREPARATION OF THE OPERATIVE FIELD

Ten months ago, I published the original article on the use of collodion in the preparation of the operative field.[1] Since then, the British Army Medical Corps has recognized its practical value in war surgery.[2] Hence, with the actuality of American participation in this second World War, I present this summary of studies, as yet incomplete.

In the surgical scene, the skin alone defies sterilization. Micro-organisms float forth from its pores, in a continual stream of sudoriferous and sebaceous fluid. The hands of the operating team are sheathed in rubber; the operative site merits but does not receive mechanical protection. Ordinary preoperative skin preparations partially and temporarily disinfect but fail to sterilize the skin. The painting or spraying of rapid-drying flexible collodion forms a smooth, sterile, and impermeable coating of the operative site.

Collodion: There are two types of collodion: (1) ordinary (or non-flexible), and (2) flexible. Ordinary collodion is prepared by dissolving pyroxylin (guncotton) in a mixture of 75 per cent ether and 25 per cent alcohol. The ether content gives it a desirable fat solvent action. Flexible collodion is ordinary collodion with camphor and castor oil in solution; it is less contractile, less brittle, and forms a protective covering that remains impermeable longer. Flexible collodion was used exclusively in my clinical experimentation.

Collodion is cheap, transparent, and sterile *per se*. It is easy to obtain, keep, apply, and remove; it does not irritate the skin. Collodion dries in thirty seconds, hermetically sealing the pathogenic organisms of the skin.

Ether boils at 35° C. (95° F.), hence collodion must be kept in a cool place. Collodion is highly inflammable and should be kept in a well closed container, removed from fire, and unexposed to light.

Application of Collodion: Flexible collodion may be painted or sprayed on the operative field. Ordinary preoperative preparation of the skin with alcohol and iodine preceded its application in all clinical cases; this added precaution might not be

necessary in war surgery. Multiple coats of flexible collodion were painted or sprayed on the area circumscribing the line of intended incision.

(a) *Painted*—a gauze sponge and metal forceps are the only necessary equipment.

(b) *Sprayed*: (1) Electric spray outfit (De Vilbiss): This equipment, operating on compressed air, can be purchased for less than thirty dollars. It is compact and reliable.

(2) Hand power spraying outfit (De Vilbiss): This equipment, operating on compressed air, can be purchased for less than ten dollars. It is bulky, but reliable.

(3) Atomizer (De Vilbiss #260): After repeated use, the atomizer will clog with collodion precipitate. To prevent this inconvenience, I have diluted collodion with two or three parts of ether. This atomizer may be purchased for two dollars.

Methods of Study: (a) Experimental: Using Novak's method of culture of the skin of the abdominal wall[3] and a reluctantly donated abdomen, I have tested the sterility produced by merthiolate, tincture of iodine, flexible collodion, ordinary collodion, flexible collodion with 1 per cent tincture of iodine, and ordinary collodion with 1 per cent tincture of iodine. Controls of normal saline were used. Cultures were taken from each chemically treated area at intervals of one-quarter hour, and one-half hour after each application. The results, at present, would seem to show that collodion, whether ordinary or flexible, with or without tincture of iodine, offers maintained sterility.

(b) Clinical: In a score of cases, flexible collodion, whether painted or sprayed, did not irritate the skin. No wound infection was discovered in this very small and inconclusive number of cases.

The gynecologic and obstetric surgeon may shield the perineum from the anus with flexible collodion. The abdominal surgeon may use it to help prevent skin irritation at the site of colostomies.

War surgery emphasizes the advantages of collodion.

REFERENCES

1. Nix, J. T., Jr.: The collodion spray in the preparation of the operative field, New Orleans M. & S. J., 93:480, 1941.

2. Bailey, Hamilton: Surgery of Modern Warfare, The Williams and Wilkins Company, Baltimore, 1941.

3. Novak, M., and Hall, H.: Method for determining efficiency of preoperative skin sterilization, Surgery, 5:560, 1939.

TRANSACTIONS OF ORLEANS PARISH MEDICAL SOCIETY

CALENDAR OF MEETINGS

February 2. Orleans Parish Medical Society, Board of Directors, 8 p. m.

February 3. Eye, Ear, Nose and Throat Staff, 8 p. m.

February 4. Clinico-pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m.
Hutchinson Memorial Clinic Staff, 8 p. m.
Mercy Hospital Staff, 8 p. m.

February 5. Clinico-pathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.

February 9. Orleans Parish Medical Society, Scientific Meeting, 8 p. m.

February 10. Eye, Ear, Nose and Throat Society, 8 p. m.

February 11. Clinico-pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m.
Touro Infirmary Staff, 8 p. m.
Woman's Auxiliary, Orleans Parish Medical Society, Orleans Club, 3 p. m.

February 16. Hotel Dieu Staff, 8 p. m.
Clinico-pathologic Conference, Baptist Hospital, 8 p. m.

February 17. Charity Hospital Medical Staff, 8 p. m.

February 18. Clinico-pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m.
Charity Hospital Surgical Staff, 8 p. m.
Clinico-pathologic Conference, Hotel Dieu, 8:15 p. m.

February 19. Clinico-pathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.

February 20. I. C. R. R. Hospital Staff, 12:30 p. m.
New Orleans Hospital and Dispensary for Women and Children Staff, 8 p. m.

February 24. Baptist Hospital Staff, 8 p. m.

February 25. Clinico-pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m.
French Hospital Staff, 8 p. m.

February 26. Clinico-pathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 12:15 p. m.

February 27. L. S. U. Faculty Club, 8 p. m.

1942 ANNUAL MEETING

The Arrangement Committee, under the Chairmanship of Dr. John T. O'Ferrall, has been very active in making plans for the 1942 meeting. There

will be a rearrangement of the program due to the fact that it has been deemed advisable to lengthen the meeting to four days. It is planned that the House of Delegates begin transaction of business on the morning of April 27 and that the scientific program be carried through the morning of April 30.

Below are listed names of members of the Advisory Committee and chairmen of the various subcommittees on arrangement. Do not fail to contact these doctors if there is any information or assistance you desire or if you have any constructive suggestions to offer in regard to the meeting.

Advisory Committee—Drs. Henry Blum, W. R. Buffington, C. Grenes Cole, A. V. Friedrichs, Val Fuchs, Roy B. Harrison, Edwin L. Lawson, E. L. Leckert, Walter E. Levy, Leon J. Menville, and Edwin L. Zander.

Badges—Dr. James E. Bailey.
Banquet—Dr. Edmund Connely.
Commercial Exhibits—Dr. Max M. Green.
Decorations—Dr. C. L. Cox.
Entertainment—Dr. E. A. Ficklen.
Finance—Dr. H. W. E. Walther.
Golf—Dr. E. L. King.
Halls and Meeting Places—Dr. Howard Mahorner.
Hotels—Dr. Sam Hobson.
Lanterns—Dr. John T. Sanders.
Luncheons—Dr. Cassius L. Peacock.
Publicity—Dr. T. B. Sellers.
Registration—Dr. H. Theodore Simon.
Scientific Exhibits—Dr. Waldemar R. Metz.
Signs—Dr. A. F. Hebert.
Transportation—Dr. H. O. Ernst.
Women Physicians—Dr. Maud Loeber.

Many scientific and commercial exhibits have already been secured; however, if other members wish to have exhibits, it is requested that they get in touch with the Chairman of the Committee on Scientific Exhibits at once. Also if members know of commercial firms which should exhibit and have not applied for space, they should refer them to the Chairman of the Committee on Commercial Exhibits.

The Roosevelt Hotel has been selected as headquarters for the meeting. Reservations can be made by writing the Chairman of the Committee on Hotels, the office of the Society, or to the hotel direct.

Chairmen of the various scientific sections were appointed several months ago by the president of the Society. The program for each section must be completed by the twenty-seventh of this month; therefore all who desire to present a paper at the meeting should contact the chairman of the section on which they wish to appear, immediately. Names of the chairmen are listed below:

Bacteriology and Pathology—Dr. John H. Connell, New Orleans.

Eye, Ear, nose and Throat—Dr. Noel T. Simmonds, Alexandria.

Gastro-enterology—Dr. Gordon McHardy, New Orleans.

General Surgery—Dr. J. E. Heard, Shreveport.

Gynecology and Obstetrics—Dr. Rhett McMahon, Baton Rouge.

Medicine and Therapeutics—Dr. J. P. Sanders, Shreveport.

Nervous Diseases—Dr. M. S. Freiman, Pineville.

Orthopedic Surgery—Dr. T. M. Oxford, Shreveport.

Pediatrics—Dr. Charles J. Bloom, New Orleans.

Public Health and Sanitation—Dr. Joseph S. D'Antoni, New Orleans.

Radiology—Dr. E. C. Samuel, New Orleans.

Urology—Dr. Eugene B. Vickery, New Orleans.

From all indications the meeting this year will be one of the most interesting and successful in the history of the Society, and it is hoped that every member will make an effort to attend.

During the month of January the Society held two meetings. One was the installation meeting and the other a regular scientific meeting.

NEW OFFICERS

On January 12, 1942, the following physicians were installed as officers of the Orleans Parish Medical Society for the year 1942: Dr. Edgar Burns, president; Dr. H. B. Alsobrook, president-elect; Dr. E. L. Leckert, first vice-president; Dr. William B. Clark, second vice-president; Dr. Daniel J. Murphy, third vice-president; Dr. Edwin L. Zander, secretary; Dr. A. V. Friedrichs, treasurer; Dr. Max M. Green, librarian; Dr. Paul G. Lacroix, Dr. J. O. Weilbaecher, Jr., and Dr. John Menville, additional members to the Board of Directors.

SCIENTIFIC MEETING

The program of the scientific meeting held January 26, 1942, was as follows:

Symposium on Tumors of the Central Nervous System.

a. The Pathology of Tumors of the Central Nervous System
   By Dr. Hugh Page Newbill
b. The Psychiatric Aspect of Cerebral Tumors
   By Dr. H. Randolph Unsworth
c. Diagnostic Factors in Cranial Tumors
   By Dr. Lewis A. Golden
d. Brain Tumors
   By Dr. Gilbert C. Anderson
e. Tumors of the Spinal Cord
   By Dr. Dean H. Echols

NEWS ITEM

Dr. R. L. DeBuys was recently elected president for 1942 of the New Orleans Golf Association.

Dr. Vincent J. Derbes was recently elected to associate membership in the Society for the Study of Asthma and Allied Conditions.

Dr. Alton Ochsner was elected secretary of the Southern Surgical Association at a recent meeting of this organization at Pinehurst.

Dr. Prudence E. Prouet was recently promoted to the rank of captain in the United States Army.

Dr. B. B. Weinstein will address the History of Medicine Society at Tulane University on February 12 on "Three Men from Padua." On March 13, Dr. Julius L. Wilson will speak on "The History of Tuberculosis" and on April 10 Miss Mary Louise Marshall will speak on "Confederate Medicine." These meetings are held at 8 o'clock in the Hutchinson Memorial Building and are open to the laity as well as the medical profession.

TREASURER'S REPORT

Balance on hand November 20, 1941	$5,101.28
Credits, December	2,420.81
Total Credits	$7,522.09
Expenditures, December	1,772.06
Balance on hand December 31, 1941	$5,750.03

EDWIN L. ZANDER, M. D.,
Secretary.

LOUISIANA STATE MEDICAL SOCIETY NEWS

CALENDAR

PARISH AND DISTRICT ME DICAL SOCIETY MEETINGS

Society	Date	Place
East Baton Rouge	Second Wednesday of every month	Baton Rouge
Morehouse	Second Tuesday of every month	Bastrop
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of every month	Monroe
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	

TO MEMBERS OF LOUISIANA STATE MEDICAL SOCIETY

Dear Doctors:

The Louisiana State Medical Society will meet in New Orleans, April twenty-seventh through thirtieth.

Your Committee on Scientific Exhibits is anxious to make this part of our program a success and would like to have as many representative and instructive contributions as possible. If you desire to have an exhibit at the meeting kindly advise us by communicating with the office of the Society, 1430 Tulane Avenue, so that we may furnish you with a form on which you may indicate how much space you will need.

The committee will be delighted to have your exhibit and will cooperate wth you to the fullest extent in regard to lighting, space and position.

Thank you for your prompt attention in this matter.

Yours very fraternally,
WALDEMAR R. METZ, M. D., Chairman,
Committee on Scientific Exhibits.

THE NEW HEALTH OFFICER

Dr. Christopher L. Mengis has been appointed by Governor Jones as President of the Louisiana State Board of Health to succeed Dr. John H. Musser. Dr. Mengis will take office February 1.

The selection of this new health officer should meet with the universal approval of the medical profession and the laity. Dr. Mengis has been active in organized medicine and at various times has held the position of president of the Fifth District Medical Society, secretary-treasurer and president of the Iberia Parish Medical Society. He is a member not only of the State Medical Society but of national medical societies.

Dr. Mengis graduated from Tulane in 1900. He served for six years under the United States Public Health Service in Central America. He then practiced medicine in Madison Parish and at the start of the World War volunteered and served in this country and Puerto Rico until his discharge in 1919 with the rank of Major. After the war, Dr. Mengis practiced medicine in northern Louisiana. In 1936 he was placed on the staff of the State Board of Health and sent away for training, obtaining his degree of Doctor of Public Health. He was in charge of the Division of Crippled Children until 1939 when he was sent to head a parish health unit, becoming the Director of the Iberia Parish Health Unit, where he built up undoubtedly one of the best parish health units in the state.

Dr. Mengis brings to his new position the experiences of a practitioner of medicine with the training of a public health officer. He will have a sympathetic understanding of the problems of the practice of medicine and the practicing doctor. All success is wished to him in his new position.

ENROLLMENT FOR SERVICE IN THE ARMY AND NAVY

Last month The Journal published an urgent request to all physicians of the United States to fill out the questionnaire published in that issue and mail it at once to Dr. Sam F. Seeley, Executive Officer of the Procurement and Assignment Service, Washington, D. C., indicating their availability to serve the nation in the present emergency. The response to this call to the medical profession to date has been highly gratifying. The following statement to that effect, with additional instructions, has been received from the Directing Board of the Procurement and Assignment Service:

The response of the physicians of the country to the Procurement and Assignment Service request for enrollment of those now ready for immediate service in the army or the navy is highly gratifying. All names are being processed, and those who meet the present demands of the Surgeon Generals will receive application forms and authority to appear for physical examination at an early date. All who are now ready for immediate duty should forward applications to the Procurement and Assignment Service at once. It is not the intention of the Procurement and Assignment Service to register every physician, dentist and veterinarian at the present time. Only those available for immediate assignments should register at this time. The physical requirements of all military, governmental, industrial and civil agencies will be published in national and state journals immediately. On the basis of this information every physician, dentist and veterinarian will be able to make a self appraisal of his physical qualifications. Within a few weeks the Procurement and Assignment Service will mail to all individuals a form on which they will be asked to state their preferences for assignment to all agencies of national defense which require medical, dental and veterinary personnel and for service in communities in public health and other civil categories. In this way every physician, dentist and veterinarian of the country will be able to lend maximum support to the national emergency. In order to meet the expanding needs of the military services, every physician immediately available for duty should mail his application blank to the Procurement and Assignment Service at once. All others will be given an opportunity to volunteer in the near future.

FRANK H. LAHEY, M.D., Chairman.
JAMES E. PAULLIN, M.D.
HARVEY B. STONE, M.D.
HAROLD S. DIEHL, M.D.
C. WILLARD CAMALIER, D.D.S.
SAM F. SEELEY, Major, M.C., U.S. Army, Executive Officer.

CIVILIAN DEFENSE HEALTH AND MEDICAL COMMITTEE

President Roosevelt has appointed Dr. George Baehr, Chief Medical Officer of the Office of Civilian Defense, to be a member of the Health and Medical Committee of the Office of Defense Health and Welfare Services. Dr. Irvin Abell, Louisville, Kentucky, chairman of the Committee on Medical Preparedness of the American Medical Association, is chairman of the Health and Medical Committee and other members are the Surgeon General of the U. S. Army, Major General James C. Magee; the Surgeon General of the U. S. Navy, Rear Admiral Ross T. McIntire; the Surgeon General of the U. S. Public Health Service, Dr. Thomas Parran, and the chairman of the Division of Medical Sciences, National Research Council, Dr. Lewis W. Weed, Baltimore. The Office of Defense Health and Welfare Services is a part of the Office for Emergency Management which in turn is part of the Executive Office of the President. The director of the ODHWS is Paul V. McNutt, who is also Federal Security Administrator.

RECOMMENDATIONS TO ALL PHYSICIANS WITH REFERENCE TO THE NATIONAL EMERGENCY

I. *Medical Students*

A. All students holding letters of acceptance from the Dean for admission to medical colleges and freshmen and sophomores of good academic standing in medical colleges should present letters or have letters presented for them by their deans to their local boards of the Selective Service System. This step is necessary in order to be considered for deferment in Class II-A as a medical student. If local boards classify such students in Class I-A, they should immediately notify their deans and if necessary exercise their rights of appeal to the Board of Appeals. If, after exhausting such rights of appeal, further consideration is necessary, request for further appeal may be made to the State Director and if necessary to the National Diretcor of the Selective Service System. These officers have the power to take appeals to the President.

B. Those junior and senior students who are disqualified physically for commissions are to be recommended for deferment to local boards by their deans. These students should enroll with the Procurement and Assignment Service for other assignment.

C. All junior and senior students in good standing in medical schools, who have not done so, should apply immediately for commission in the Army or the Navy. This commission is in the grade of Second Lieutenant, Medical Administrative Corps of the Army of the United States, or Ensign H.V. (P) of the United States Navy Reserve, the choice as to Army or Navy being entirely voluntary. Applications for commission in the Army should be made to the Corps Area Surgeon of the Corps Area in which the applicant resides and applications for commission in the Navy should be made to the Commandant of the Naval District in which the applicant resides. Medical R.O.T.C. students should

continue as before with a view of obtaining commissions as First Lieutenants, Medical Corps, upon graduation. Students who hold commissions, while the commissions are in force, come under the jurisdiction of the Army and Navy authorities and are not subject to induction under the Selective Service Act. The Army and Navy authorities will defer calling these officers to active duty until they have completed their medical education and at least 12 months of internship.

II. *Recent Graduates*

Upon successful completion of the medical college course, every individual holding commission as a Second Lieutenant, Medical Administrative Corps, Army of the United States, should make immediate application to the Adjutant General, United States Army, Washington, D. C., for appointment as First Lieutenant, Medical Corps, Army of the United States. Every individual holding commission as Ensign H.V. (P), U. S. Navy Reserve, should make immediate application to the Commandant of his Naval District for commission as Lieutenant (J.G.) Medical Corps Reserve, U. S. Navy. If appointment is desired in the grade of Lieutenant, (J.G.) in the regular Medical Corps of the U. S. Navy, application should be made to the Bureau of Medicine and Surgery, Navy Department, Washington, D. C.

III. *Twelve Months Intern*

All interns should apply for a commission as First Lieutenant, Medical Corps, Army of the United States, or as Lieutenant (J.G.), United States Navy or Navy Reserve. Upon completion of 12 months' internship, except in rare instances where the necessity of continuation as a member of the staff or as a resident can be defended by the institution, all who are physically fit may be required to enter military service. Those commissioned may then expect to enter military service in their professional capacity as medical officers; those who failed to apply for commission are liable for military service under the Selective Service Acts.

IV. *Hospital Staff Members*

Interns with more than 12 months of internship, assistant residents, fellows, residents, junior staff members, and staff members under the age of 45, fall within the provisions of the Selective Service Acts which provide that all men between the ages of 20 and 45 are liable for military service. All such men holding Army commissions are subject to call at any time and only *temporary deferment* is possible, upon approval of the application made by the institution to the Adjutant General of the United States Army certifying that the individual is temporarily indispensable. All such men holding Naval Reserve commissions are subject to call at any time at the discretion of the Secretary of the Navy. Temporary deferments may be granted only upon approval of applications made to the Surgeon General of the Navy.

All men in this category who do not hold commissions should enroll with the Procurement and Assignment Service. The Procurement and Assignment Service under the Executive Order of the President is charged with the proper distribution of medical personnel for military, governmental, industrial, and civil agencies of the entire country. All those so enrolled whose services have not been established as essential in their present capacities will be certified as available to the Army, Navy, governmental, industrial, or civil agencies requiring their services for the duration of the war.

V. *All Physicians Under Forty-five*

All male physicians in this category are liable for military service and those who do not hold commissions are subject to induction under the Selective Service Acts. In order that their service may be utilized in a professional capacity as medical officers, they should be made available for service when needed. Wherever possible, their present positions in civil life should be filled or provisions made for filling their positions, by those who are (a) over 45, (b) physicians under 45 who are physically disqualified for military service, (c) women physicians, and (d) instructors and those engaged in research who do not possess an M. D. degree whose utilization would make available a physician for military service.

Every physician in this age group will be asked to enroll at an early date with the Procurement and Assignment Service. He will be certified for a position commensurate with his professional training and experience as requisitions are placed with the Procurement and Assignment Service by military, governmental, industrial or civil agencies requiring the assistance of those who must be dislocated for the duration of the national emergency.

VI. *All Physicians Over Forty-five*

All physicians over 45 will be asked to enroll with the Procurement and Assignment Service at an early date. Those who are essential in their present capacities will be retained and those who are available for assignment to military, governmental, industrial or civil agencies may be asked by the Procurement and Assignment Service to serve those Agencies.

The maximal age for original appointment in the Army of the United States is 55. The maximal age for original appointment in the Naval Reserve is 50 years of age.

All inquiries concerning The Procurement and Assignment Service should be sent to The Executive Officer, 5654 Social Security Building, 4th and Independence Avenues, SW, Washington, D. C., and not to individual members of the Directing Board or of committees thereof.

Inasmuch as the above material represents one of the most important responsibilities of the medical profession at the present time, it is the opinion

of the Assignment and Procurement Service that it deserves the most prominent place in your Journal it can be given. It is of equal importance to doctors themselves since it clarifies quite largely the demands which will be made upon the medical profession.

Sincerely yours,

FRANK H. LAHEY, M. D., Chairman
HARVEY B. STONE, M. D.
JAMES E. PAULLIN, M. D.
HAROLD S. DIEHL, M. D.
C. WILLARD CAMALIER, D. D. S.
SAM F. SEELEY, M. D.,
Executive Officer.

THE SPIRIT OF 1942

In reply to the recent questionnaire sent out by the Committee on Medical Preparedness of the State Society, the following letter was received, exemplifying the patriotism of our Louisiana doctors:

"Had my gallbladder removed some ten years ago so can only do part time work. Have practiced since 1894 and for last two years have suffered with my heart; angina pectoris which at times holds me in bed eight or ten days.

"Still am at my Country's call and if needed call—please. I am an American."

Certainly such a spirit as this is typical of the tradition of the medical profession of this state.

MORALE ADVICE

The following advice was first posted in Bristol, England, and from there spread to a goodly part of England. It is suggested and hoped that doctors will copy it and place it on their office wall or office table where it may be seen and read by patients.

MORALE

THE SECRET WEAPON THAT WILL WIN THE WAR

Congress can't vote it.
Dollars won't buy it.
It's YOUR job to build it.

PUT UNITY INTO YOUR COMMUNITY

Unity starts with U. To win the war, stop private wars at home, on the job, with the neighbors. Honest apology ends friction—starts teamwork. If we all pull together, we'll all pull through.

BE A RUMOR-STOPPER

Rumors help the enemy. Trace the facts. Face the facts. Don't exaggerate.
Make your community gossip-proof
smear-proof
panic-proof
fear-proof.
Every patriot shoots a rumor dead on sight!

MEET SHORTAGE BY SHARING

Use all of everything. Don't hoard. If everybody cares enough and everybody shares enough, everybody will have enough.
No waste in your ice-box, cash-box, brain-box!

KEEP THE MORAL STANDARDS OF THE NATION HIGH

Don't weaken the home-front by wangling something for yourself on the side.
Dishonesty and indulgence in you saps the nation's fighting strength.
A decent world tomorrow depends on how you live today!

THE SECRET OF STEADINESS AND INNER STRENGTH IS ON EVERY PENNY: "In God We Trust"

Telephone wires may be cut, radio stations off the air, but no bombardment can stop us from being directed by God.
To listen to God and obey wherever you are is your highest national service.

HANG THIS IN YOUR HOME, OFFICE, STORE AND FACTORY!

WOMEN'S FIELD ARMY OF THE AMERICAN SOCIETY FOR THE CONTROL OF CANCER

The State Assembly of this organization, with the theme "Health Defense is National Defense," was held at the Jung Hotel, January 17-18. The meeting was preceded by a dinner presided over by Dr. Edwin H. Lawson, and the evening meeting was addressed by physicians, in part. Lt. Col. S. C. Woldenberg, Chief of the Surgical Service of the Lagarde General Hospital, spoke on "Cancer Control—A Military Necessity in National Defense." Dr. George M. Leiby, head of the Division of Preventive Diseases of the State Department of Health, spoke on "Relationship of the Women's Field Army to State and National Health Departments." Dr. Edgar Burns, the newly installed president of the Orleans Parish Medical Society, spoke on "Cancer and Its Control."

The State Executive Committee of this energetic organization is composed of the following physicians: Drs. Edwin H. Lawson, Chairman; J. T. Nix and Alton Ochsner, New Orleans; S. C. Barrow, Shreveport, J. T. Cappel, Alexandria, Lester J. Williams, Baton Rouge; L. O. Clark, Lafayette; Walter Moss, Lake Charles, and John G. Snelling, Monroe.

MEDICAL OPENING

There is an opening for a young medical man on the examination staff of the Louisiana Ordnance Plant in Shreveport, Louisiana. This will give any young man his draft exemption and at the same time he will have an opportunity to serve in a defense project with a very interesting type of industrial medicine. The salary will begin with about $300 a month, depending on the individual and his adaptability. The work will be in the

nature of routine pre-employment examinations and the more detailed physical consideration involved in employment in the handling of explosives. In the event the applicant is involved in the draft, deferment can be requested upon employment.

Any physician interested in this opening is requested to communicate with Dr. Andrew S. Tomb, Silas Mason Co., Shreveport, La.

THE FOUNDATION PRIZE OF THE AMERICAN ASSOCIATION OF OBSTETRICIANS, GYNECOLOGISTS AND ABDOMINAL SURGEONS

This award, which amounts to $150.00, is open to interns, residents, graduate students, and physicians, who are actively practicing or teaching obstetrics, gynecology, or abdominal surgery. The manuscript must be limited to 5,000 words. Details of the rules governing the award may be obtained through this office.

THE LOUISIANA MERIT SYSTEM

The Council of the Louisiana Merit System announces that competitive examinations will be held for positions in the State Department of Labor, State Department of Public Welfare, and State Board of Health. This second series of examinations is open to social workers and others who have always been in the same category. Details may be had from the office of the Council 631 Main Street, Baton Rouge.

NEWS ITEMS

Dr. T. A. Watters was elected vice-president of the Alumni Association of the Neurological Institute of New York for the coming year, at their annual meeting in New York City. Dr. Watters also attended the meeting of the Program Committee of the American Psychiatric Association and a conference of the National Committee for Mental Hygiene while in New York.

Dr. William D. Cutter, for the past eleven years secretary of the Council on Medical Education and Hospitals of the American Medical Association, died on January 22 after a brief illness in Johnson City, Tennessee.

The United States Pharmacopoeial Convention will meet at the Hotel Statler, Cleveland, Ohio, on Tuesday, April 7, 1942.

The annual meeting of the American Congress on Obstetrics and Gynecology will be held in St. Louis, April 6-10, 1942.

The sixth National Social Hygiene Day will be observed February 4, 1942.

The American Association of Industrial Physicians and Surgeons, and the American Industrial Hygiene Association will hold their joint Annual Convention in Cincinnati from April 13 to 17, 1942. A program is in preparation in which important medical and hygienic problems associated with the present huge task of American industry will be presented and discussed in clinics, lectures, symposia, and scientific exhibits. The central purpose of the meeting will be to provide a five-day institute for the interchange and dissemination of information on new problems as well as for the consideration of up-to-date methods of dealing with those that are well known. The industrial physicians have taken responsibility for the program of the first two and one-half days and the hygienists for the remainder of the five days, but most of the subjects chosen for discussion will be of interest not only to physicians, but equally so to industrial engineers, and executives.

THE NEW ORLEANS GRADUATE MEDICAL ASSEMBLY

Our knowledge of medicine in times of peace must now be extended to include the medicine and surgery of war. The Assembly program has been planned to include the advances of today and the trends of tomorrow in both the medicine of peace and of war. The distinguished guest speakers will bring to those who attend many subjects of interest and practical importance. Following is a list of the speakers and their topics of discussion:

Dr. Charles F. McCuskey, Anesthesiology.
1. The Selection of the Anesthetic Agent and Method.
2. Regional Anesthesia.
3. Anesthesia in Chest Surgery.

Dr. Frank N. Wilson, Cardiology.
1. What the Electrocardiogram Has to Offer in the Diagnosis and Management of Cardiac Diseases.
2. Observations on Paroxysmal Tachycardia.
3. The Precordial Electrocardiogram.
4. Curable Diseases of the Heart.

Dr. Charles C. Dennie, Dermatology.
1. Diet in Dermatological Conditions.
2. Symposium—Sulfonamide Therapy.
3. Treatment of the Pregnant Syphilitic Woman.
4. Congenital Syphilis of the Bones and Joints.

Dr. Russell S. Boles, Gastroenterology.
1. The Relation of Alcohol to Cirrhosis of the Liver.
2. Functional Disorders of the Gastrointestinal Tract.
3. Observations on the Etiology of Peptic Ulcer.

Dr. Edwin C. Hamblen, Gynecology.
1. The Use of Female Sex Hormones in Clinical Practice.
2. Gonadotropic Therapy.
3. The Sterile Couple: Diagnostic and Therapeutic Problems.

Dr. William B. Porter, Medicine.

1. The Diagnostic Significance of Changes in the Hands.
2. Complications of Staphylococcic Cutaneous Infections.
3. Symposium—Sulfonamide Therapy.
4. Acute Pericarditis.
5. The Nature of the Host Reactions to Parasites.

Dr. William H. Sebrell, Medicine.

1. Nutrition and National Defense.
2. The Clinical Importance of Vitamin B Complex Deficiencies.
3. The Diagnosis of Subclinical Deficiency Disease.

Dr. Raymond W. Waggoner, Neuropsychiatry.

1. The Diagnosis and Treatment of Psychoneurotics in General Practice.
2. Symposium—Sulfonamide Therapy.
3. The Convulsive Disorders or "Epilepsy."
4. The Diagnosis and Treatment of Mild Cerebral Arteriosclerosis.

Dr. Samuel A. Cosgrove, Obstetrics.

1. Extraperitoneal Cesarean Section, by the Dr. Waters' Supravesical Technic.
2. Indications and Conditions for Use of Forceps.
3. Commentaries on Some Selected Case Reports.
4. Remarks on Management of Heart Disease and Toxemia in Pregnancy.

Dr. Albert D. Ruedemann, Ophthalmology.

1. Headache and Head Pain of Ocular Origin.
2. Ocular Manifestations of Allergy.
3. Differential Diagnosis of Exophthalmos.

Dr. Frank D. Dickson, Orthopedic Surgery.

1. Surgical Treatment of Arthritis.
2. The Management of Compound Fractures with Especial Reference to the Part Played by the Sulfonamide Drugs.
3. The Sulfonamides in the Treatment of Chronic Osteomyelitis.

Dr. Thomas E. Carmody, Otolaryngology.

1. Sinus Disease in Children.
2. Relation of Oral Pathology to General Medicine.
3. Tumors of the Face and Mouth.

Dr. Harry P. Smith, Pathology.

1. Vitamin K and Hemorrhagic Disease of the Newborn.
2. Vitamin K in the Treatment of Adults.
3. Clinico-pathologic Conference.

Dr. Irvine McQuarrie, Pediatrics.

1. Causes and Management of Convulsive Disorders in Childhood.
2. Symposium—Sulfonamide Therapy.
3. The Problems of Edema in Childhood.
4. Diseases of the Adrenal Glands in Children.

Dr. Ross Golden, Radiology.

1. Diseases of the Small Intestine Demonstrable by Roentgen Examination.
2. The Miller-Abbott Tube in the Treatment of Ileus, with Emphasis on the Technic of Insertion.
3. Disturbances in Small Intestinal Physiology Associated with Certain Deficiency States.

Col. Norman T. Kirk, M. C., Surgery.

1. Plan for Evacuation and Treatment of War Casualties.
2. The Guillotine or Open Amputation.
3. The Medical Department Problems in the Present Emergency.

Dr. Frank H. Lahey, Surgery.

1. Some of the Common and Uncommon Thyroid Problems.
2. Clinico-pathologic Conference.
3. Lesions of the Terminal Ileum, Colon and Rectum.
4. The Place of Medicine in the Country Today.

Dr. Alexander Randall, Urology.

1. A Rational Analysis of Our Clinical Knowledge of Renal Calculus, with an Exposition of Clinical Handling.
2. Lantern Demonstration of the Origin and Growth of Renal Calculus.

The registration fee of $10.00 includes four round-table luncheons, and all features of the meeting. The many educational and other advantages of New Orleans, the well-planned program, and the hospitality of our profession assure our guests a visit of pleasure and profit.

INFECTIOUS DISEASES IN LOUISIANA

The morbidity report of the Section of Epidemiology of the Louisiana State Board of Health shows that for the fiftieth week of the year which came to a close December 13, there was a really remarkable absence of reportable diseases, there being only four diseases reported in numbers greater than ten, namely: 193 cases of syphiils, 23 of pulmonary tuberculosis, 21 of gonorrhea, and 16 of pneumonia. In this week there were three cases of typhus fever, one each from Caldwell, Orleans and Richland parishes. Three cases of typhoid fever were also reported this week, no one parish having more than one case. For the week which terminated December 20 the diseases in numbers greater than ten were: 157 cases of syphilis, 45 of gonorrhea, 27 of pneumonia, 21 of pulmonary tuberculosis, 15 of chickenpox, 11 of measles, and 10 of diphtheria. Four cases of typhus fever were reported this week, scattered throughout the southern part of the state, and one case of poliomyelitis

was found in Ouachita. If the epidemiologic report of two weeks previous was remarkable, still more unusual was that of December 27. Excluding syphilis with 111 and gonorrhea with 21 cases, there was only one disease in which there were more than ten cases reported. In this instance, only 10 cases of pneumonia were reported as contrasted with the five-year average of 51; eight cases of pulmonary tuberculosis were listed in contrast to the five-year average of 21. Truly a remarkably healthy week. Of the rarer diseases, two cases of meningococcic meningitis were listed and two of typhus fever. Three cases of typhoid fever were found in DeSoto and two in Lafayette. For the first reported week of the year 1942, ending January 3, there were listed 96 cases of syphilis, 65 of lobar pneumonia, 22 of uncinariasis, 20 of pulmonary tuberculosis, 18 of gonorrhea, 15 of chickenpox, and 13 of mumps. There were listed two cases of meningococcic meningitis, three of typhoid fever, and one of poliomyelitis.

The weekly morbidity report, beginning 1942, will be changed in form from those of the past few years. Hereafter the weekly report will be given, the total number of cases in the previous four weeks, and the total number of cases that occurred throughout the year starting with January first and adding each week the number of cases to the total which has been reported in every specific week.

HEALTH OF NEW ORLEANS

The Bureau of the Census, U. S. Department of Commerce, has reported that for the week ending December 13, there was a rather sharp increase in the number of deaths as contrasted with the previous week, 40 more people dying in the City of New Orleans this week than they did in the former week. These deaths were divided 91 white and 52 negro, with only eight of the deaths occurring in children under one year of age. For the week which terminated December 20, there was very little change, 139 deaths being recorded of which 86 were white and 53 negro. Thirteen of these deaths were in infants, nine negro and four white. There was somewhat of a drop for the last reportable week of the year. Of the 130 deaths in the city this week, 85 were in the white and 45 in the negro race. The most remarkable thing about this particular week was the fact that there were only two infant deaths, one white and one negro. For the first week of the new year, the increase of 34 deaths in the city was a result of 108 white people expiring and 56 negroes. Evidently the infant deaths of the previous week were saved up for this week because there were 15 babies succumbing to disease in the week ending January 3, nine of whom were colored children.

A TRIBUTE

To Members of the family of the late Dr. Robert William O'Donnell, Monroe, Louisiana:

To the New Orleans Medical and Surgical Journal:
To Members of the Louisiana State Medical Society and Doctors Everywhere:

It is the wish of the members of the Ouachita Parish Medical Society to express our high appreciation and respect for the personal and professional qualities of our recently deceased fellow member, Dr. R. W. O'Donnell.

We also wish to express our profound sorrow and our sympathy to his family. "To live in the hearts of those we leave behind is not to die."

Signed: F. C. BENNETT, M. D., Chairman.
G. M. SNELLINGS, M. D.
C. P. GRAY, M. D.
ROBERT. W. FAULK, M. D.
Committee of Ouachita Parish Medical Society.

FRANK J. CHALARON
(1869-1942)

The innumerable friends of Dr. Frank Joseph Chalaron were saddened by his sudden death on January 16.

Dr. Chalaron was one of the outstanding medical men in the City of New Orleans and the State of Louisiana. He rendered services to the State Society which extended over thirty years. During the greater part of this time he was the Chairman of the Budget and Finance Committee and watched with assiduous attention and kept guard over the finances of the State Medical Society, devoting much time to this duty. He was repeatedly a member of the House of Delegates, representing the Orleans Parish Medical Society. In this legislative body his advice was sought after as his suggestions always were constructive and serviceable.

Dr. Chalaron was a public-minded citizen interested in the welfare and well-being of the citizens of the city and state. For many years he acted as a consultant for the Red Cross.

Dr. Chalaron specialized in urology. He was the first man in the city to take up this specialty and to make it his own. His hospital connections were several but to the Mercy Hospital he gave the greater part of his time. He was head of the department of urology in this institution and was a past-president of the staff.

Dr. Chalaron will be hard to replace. Lovable, dignified, sincere, his death will leave a vacancy in organized medicine which will be hard to fill.

WOMAN'S AUXILIARY
Louisiana State Medical Society

President—Mrs. Aynaud Hebert, New Orleans.

President-elect—Mrs. Clarence B. Erickson, Shreveport.

First Vice-president—Mrs. H. O. Barker, Alexandria.

Second Vice-president—Mrs. Cecil O. Lorio, Baton Rouge.

Third Vice-president—Mrs. B. L. Cook, Minden.

Fourth Vice-president—Mrs. R. W. O'Donnell, Monroe.

Treasurer—Mrs. Daniel J. Murphy, New Orleans.

Recording Secretary—Mrs. Rhodes Spedale, Plaquemine.

Corresponding Secretary—Mrs. Charles R. Hume, New Orleans.

During the past month your president, Mrs. Aynaud Hébert, visited the auxiliaries of Baton Rouge, Shreveport, Natchitoches and Plaquemine parishes. She reports with great pride the outstanding work of each of these auxiliaries, and cannot say enough in praise of their fine work and the outstanding programs they have selected. Mrs. Hébert plans to visit each auxiliary individually before her term expires.

A special plea is given to each auxiliary to make some effort toward the Jane Todd Crawford Memorial. The proceeds of this fund are to be invested in Defense Bonds, thereby covering two important programs in one.

Dr. W. W. Bauer, Director of Health Education of the American Medical Association will tour the state between February 17 and March 6. This is a rare opportunity to hear one of the outstanding speakers of the association. Every auxiliary interested in having Dr. Bauer talk to their group should get in touch with the state public relations chairman, Mrs. J. O. Duhon, of Lafayette, who will arrange dates accordingly.

ORLEANS PARISH

The Woman's Auxiliary to the Orleans Parish Medical Society held its first meeting of the year 1942 with its newly inducted president, Mrs. Paul G. LaCroix, presiding.

Plans for an outstanding program for the year were approved. There was a very large membership in attendance. After the first session, a most interesting discussion on Belgium was given by Father Dessogne, of Loyola, who was formerly with the Belgium Intelligence Department.

The following officers and committee chairmen were introduced:

President, Mrs. Paul G. Lacroix, 3132 State St. Dr., WA 6272; President-elect, Mrs. C. L. Peacock, 8415 So. Claiborne Ave., WA 7040; Past-president, Mrs. James W. Warren, 470 Audubon Blvd., WA 3485; First Vice-president, Mrs. Gilbert Anderson, 5521 Atlanta St., UP 2884; Second Vice-president, Mrs. Wm. Kohlman, 1330 Eleonore St., UP 0221; Third Vice-president, Mrs. Jonas Rosenthal, 5355 St. Charles Ave., WA 5355; Fourth Vice-president, Mrs. Charles Odom, 7821 Belfast St., WA 3068; Recording Secretary, Mrs. Gordon McHardy, 25 Papworth Place, CE 2455; Treasurer, Mrs. Waldemar Metz, 2437 Jefferson Ave., WA 3314; Corresponding Secretary, Mrs. Willard Wirth, 2523 Octavia St., WA 0456; Parliamentarian, Mrs. Lloyd Kuhn, 4317 S. Miro St., JA 0661; Historian, Mrs. W. A. Reed, 2720 Octavia St., WA 4236; Press and Publicity, Mrs. George J. Taquino, 18 Fontainebleau Dr. WA 3358.

CHAIRMEN OF COMMITTEES

Program, Mrs. Lucian Alexander, 4010 St. Charles Ave., CH 4212; Hostess, Mrs. Ansel M. Caine, 1640 Robert St., JA 0321; Membership, Mrs. Aynaud F. Hébert, 2013 Napoleon Ave., JA 3434; Registration, Mrs. Edgar Burns, 3227 Coliseum St., CH 5121; Notification, Mrs. C. L. Peacock, 8415 So. Claiborne Ave., WA 7040; Telephone, Mrs. Gilbert Anderson, 5521 Atlanta St., UP 2884; Courtesy, Mrs. Roy B. Harrison, 2327 Napoleon Ave., JA 0129; Motor Corps, Mrs. Philips Carter, 3122 La. Ave. Pkwy., CH 2464; Periodic Health, Mrs. William Kohlman, 1330 Eleonore St., UP 0221; Cancer, Mrs. L. S. Charbonnet, 2809 Audubon St., WA 2190; Red Cross, Mrs. John Dunn, 8410 Pontchartrain Blvd., GA. 4877; Tuberculosis, Mrs. Charles Odom, 7821 Belfast St., WA 3068; Clothes, Mrs. Donovan C. Browne, 4920 St. Charles Ave., UP 0069; Samples, Mrs. Jonas W. Rosenthal, 5355 St. Charles Ave., WA 5355; Public Relations, Mrs. J. W. Warren, 470 Audubon Blvd., WA 3486; Contact, Mrs. C. Grenes Cole, 4938 St. Charles Ave., UP 3867; Commemoration, Mrs. Jules Myron Davidson, 5133 St. Charles Ave., JA 8800; Bulletin, Mrs. Jerome Landry, 2336 Milan St., JA 7041; Community Chest, Mrs. H. Theodore Simon, 1300 Third St., CH 1300; Printing and Supplies, Mrs. Frederick Fenno, 1630 Napoleon Ave., JA 3202.

BOOK REVIEWS

Electrocardiography Including an Atlas of Electrocardiograms: By Louis N. Katz, A. B., M. D. Philadelphia, Lea & Febiger, 1941. Pp. 580; illus. charts. Price $10.00.

Exercises in Electrocardiographic Interpretation: By Louis N. Katz, A. B., M. D. Philadelphia, Lea & Febiger, 1941. Pp. 222. Price $5.00.

The first book noted above is divided into three sections. Each section is followed by a rather extensive bibliography.

In section one the author discusses the theory of electrocardiography including descriptions of galvanometers and available types of electrocardiographic machines. He describes the various types of artefacts and their causes. He quotes *in toto* the recommendations of the joint committees of the American Heart Association and the Cardiac So-

ciety of Great Britain as to the standardization of precordial leads. He advises that all cardiologists follow this recommendation. He is, however, of the opinion that the lead from the cardiac apex is not as satisfactory as one determined by fixed markings on the chest. He and his co-workers take two chest leads, CF2 and CF4, these are labeled four and five respectively. He thinks that CF2 is the most important lead. Many cardiologists probably would not agree with this.

There are six pages devoted to the special anatomy of the heart and eight to the physiologic properties.

In discussing the place of the electrocardiogram in clinical practice, he says that it is of value to the clinician in determining when he is approaching the toxic limits of digitalis medication. In a recent study by Geiger, Blaney and Druckemiller they conclude, "that the electrocardiogram has no practical clinical value for the quantitative estimation of digitalis saturation." This has been the reviewer's feelings for a long time.

In section two he takes up the invariants, namely the P waves, the QRS complex, the ST segment and the T waves. He also describes the variants, the contour direction, duration ST segment, and the T waves. The normal U wave he considers in the present state of our knowledge to be of unknown clinical significance. He discusses changes seen in the electrocardiogram following the administration of drugs and those changes that occur during acute illness.

There are one hundred nine pages devoted to coronary disease, coronary insufficiency, and myocardial infarct. There are curves showing the changes that are seen in congenital heart disease, thyroid disease, hypertension, pericarditis and chronic valvular disease. There are numerous reproductions with legends, most of them are good.

Section three is devoted to systematic descriptions of the electrocardiograms in the arrhythmias. There are two hundred twenty pages devoted to the varieties of arrhythmias. This is the best section of the book. There are numerous reproductions of electrocardiograms with legends. There are a few curves and a few statements that might be questioned by some.

The book as a whole would be of more use in the hands of those who have had some training in electrocardiography and one can recommend it to that type of reader. There are better books for the beginner.

"Exercises in Electrocardiographic Interpretation" is a companion volume to this book. It contains two hundred and four pages with an appendix of fourteen, and is illustrated with one hundred twenty-eight engravings containing one hundred eighty-nine electrocardiograms.

The electrocardiograms are arranged on one page with the description, interpretaton, clinical story and correlation on the opposite page. One can usually expect some differences of opinion in the interpretations of electrocardiograms.

This volume as a whole can be recommended to any one interested in this subject.

J. M. BAMBER, M. D.

A Manual of the Treatment of Fractures: By John A. Caldwell, M. D. Springfield, Ill., Charles C. Thomas, 1941. Pp. 150. Price $3.50.

This concise work on fractures covers the whole field of fracture work so clearly and so well, that it can be unqualifiedly recommended to any student as a basis for learning the subject, and to any intern or house officer as a guide to treatment. The best feature of the book is the fact that the author has clung to major principles throughout his discussions, and minimized the mechanics of the actual types of aftercare so often described. As a result the reader is not lost in a maze of technical description, but is given an anatomic picture of the problem presented by any given fracture, and the reasonable solution based on the anatomy of the part.

The bibliography at the end of each chapter is excellent and gives adequate opportunity for the individual to follow up any given problem in more major works. As a ready reference for any doctor who feels the need of advice on the treatment of fractures in general, this work can be considered one of the best of its kind published to date.

FRANK J. COX, M. D.

Textbook of General Surgery: By Warren H. Cole, M. D., F. A. C. S., and Robert Elman, M. D., 3d ed. New York, D. Appleton-Century Co., Inc., 1941. Pp. 1067. Price $8.00.

The latest edition of this book, which the authors first published in 1936, has been completely reset in an attempt to include the many advances in surgery which have been made even since the revised edition published in 1939. Particular attention is devoted to open wounds, amputations, burns, and the treatment of compound fractures, because of the increased importance which these conditions have assumed in the present war. The use of silk in the repair of wounds is emphasized, and the employment of sulfonamide drugs in surgical practice is discussed in relation to the many applications of this form of therapy. As in previous editions, details of operative procedures are, in most instances, not given. The newer concepts and data concerning transfusion of blood and blood plasma, and the most recent developments in the treatment of patients with jaundice are included. The increasing usefulness of endocrine and vitamin preparations in the management of surgical cases is also emphasized. Numerous illustrations have been eliminated or replaced by new ones, and by condensing the chapters on infection, and by deletion of relatively unimportant or obsolete material contained in the earlier editions, the additions to the book have been

made without a considerable increase in the size of the text.

AMBROSE H. STORCK, M. D.

Textbook of Pathology: Edited by E. T. Bell, M. D. 4th ed. enl. & rev. Philadelphia, Lea & Febiger, 1941. Pp. 931. Price $9.50.

This text represents one of the later additions to the field of pathology. Even at that this work has gone through four editions, no doubt as a result of its popularity as a teaching and reference text. The present text presents certain innovations which fall in line with what seems to be the modern requirements of a textbook of pathology, that is, a much closer correlation with the clinical side of medicine. It would seem that this feature may in some instances be carried to extremes. It is felt that a discussion of therapy, in some instances, is certainly out of place in a textbook of pathology. It is pleasing to note that the author has included all important and recent additions to the specialty of pathology without including those which are too theoretical or which might lay the work open to criticism.

The text is clearly written and well illustrated by a fairly ample number of photographs of excellent quality. Another commendable feature is an excellent bibliography, consisting of the most recent pertinent references, following each chapter.

The chapters on diseases of the urinary system and heart are written by Drs. Bell and Clawson respectively and are well discussed due to the interest and ability of these authors in these respective fields. The work in its present form should serve admirably as a teaching and reference text.

H. J. SCHATTENBERG, M. D.

Shock Treatment in Psychiatry: By Lucie Jessner, M. D., Ph.D., and V. Gerard Ryan, M. D. New York, Grune & Stratton, Inc., 1941. Pp. 149. Price $3.50.

Even though, as Harry Solomon states in the introduction, shock therapy's form is "none-too-pretty" and any method of producing shock is distasteful, this type of treatment is here and is likely to remain until better methods are found. And he effectively philosophizes thus: "One cannot view these therapeutic approaches without being conscious that a new era has opened in psychiatry. If a few convulsions completely change the emotional tone of an individual, what is the mechanism involved? Indeed we are compelled to more intensive study of the cause of emotional responses. If paranoid delusions are wafted away during the course of insulin comas, one is led to speculation concerning the brain function that leads to their formation. New methods of study must be evolved. The psychiatrist, the neurologist, the neuropathologist and the physiologist must join the attempt to understand brain and mind function."

The book is designed as a brief, practical review of a decidedly revolutionary psychiatric procedure, though be it empirical with no rational explanation for the beneficial results so often observed. The authors set forth the details of insulin therapy, metrazol convulsive treatment, and electric convulsive therapy based on their own experiences and data obtained from a review of some 353 contributions as indicated in the bibliography. They deplore the fact that there has been little uniformity in the application of these methods or in the definition and delimitation of the diagnosis.

Ross' valuable suggestions as to the extent of recovery are outlined, and the defined concept of insight is excellent. There are important remarks concerning the use of shock therapy in the affective, depressive and involutional psychoses, but curiously, none specifically relating to its use in the psychoses of old age along the lines reported by Dr. W. Wilse Robinson.

All in all, this book of Jessner and Ryan is a vital, timely, necessary book, which presents an appraisal of the status of shock therapy, and it should be utilized by neuropsychiatrists everywhere.

C. P. MAY, M. D.

The Essentials of Occupational Diseases: By Jewett V. Reed, B.S., M.D., F.A.C.S., and A.K. Harcourt, B.S., M.D. Springfield, Charles C. Thomas, 1941. Pp. 225, 1 Chart. Price $4.50.

This brief text presents various occupational diseases in codified form; occurrence, symptoms, diagnosis and treatment. The briefness of the book is characterized by its limitation of diseases due to physical agents to seventeen pages with omission of such important traumatic responses as herniation and the so-called "industrial back."

RALPH H. HEEREN, M. D.

PUBLICATIONS RECEIVED

The Blakiston Company, Philadelphia: Stitt's Diagnosis, Prevention and Treatment of Tropical Diseases, by Richard P. Strong, M.D., Sc.D., D.S.M., C.B., 2v.

Grune & Stratton, New York City: Encephalitis, a Clinical Study, by Josephine B. Neal, A.B., M.D., Sc.D., F.A.C.P.

C. V. Mosby Company, St. Louis: Neuroanatomy, by Fred A. Mettler, A.M., M.D., Ph.D. The Blood Bank and the Technique and Therapeutics of Transfusions, by Robert A. Kilduffe, A.B., A.M., M.D., F.A.C.P., and Michael DeBakey, B.S., M.D., M.S., F.A.C.S.

National Society for Crippled Children in the U. S. A., Inc., Elyria, Ohio: A Primer on the Prevention of Deformity in Childhood, by Richard Beverly Raney, B.A., M.D., in collaboration with Alfred Rives Shands, Jr., B.A., M.D.

The Williams & Wilkins Company, Baltimore: Diabetes Mellitus, by Zolton T. Wirtschafter, M.D., and Morton Korenberg, M.D.